

Regulae Trium Ordinum
LITERARUM TYPOGRAPHICARUM:

OR THE

R U L E S
OF THE
THREE ORDERS
OF

Print Letters:

ROMAN CAPITALS
viz. The { ITALICK } and
{ ENGLISH } Small.

Shewing how they are compounded of
GEOMETRICK FIGURES,
and mostly made by *Rule* and *Compass*.

Useful for Writing Masters, Painters, Carvers, Masons,
and others that are Lovers of Curiosity.

By Joseph Moxon, *Hydrographer to the Kings most
Excellent Majesty.*

L O N D O N:

Printed for Joseph Moxon, on Ludgate Hill at the
Sign of Atlas. 1676.

Regiae Typographicae
LITERARUM TYPOGRAPHICARUM

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THREE ORDERS

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As also for Writing Letters, Figures, Capitals, Minors,
and others that are covers of Commodity

By Joseph Moxon, Printer to the Kings Majesty
London 1684

LONDON

Printed for Joseph Moxon, on Ludgate Hill in the
Sign of the Sun 1684

To the Worshipful

Sir Christopher Wren, *Knight*,

Surveyor of His Majesty's Buildings.

S I R,



O You as to a Lover of Rule
and Proportion I humbly
Dedicate these my Observati-
ons upon Letters: If they
prove Acceptable to you I have my whole
Wish, and shall be careless of the Sleight-
ings or Censures of the Ignorant Contem-
ners of Order and Symmetry.

Sir, I am

Your most Humble Servant.

Joseph Moxon.

To the Worshipful

The Clerk of the Peace

at the County of Middlesex

Sheweth that the said

County of Middlesex

is divided into

several parishes

and that the said

County of Middlesex

is divided into

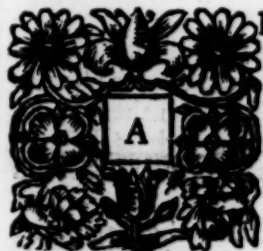
several parishes

and I am

Your most humble servant

Joseph Mason

[1]
THE
R U L E S
OF THE
THREE ORDERS
OF
Print Letters.



Among the many curious Inventions of Humane Wit, the communicating Conceptions by the Complication of Characters is worthily accounted the most Ingenious, most Necessary, and most Admirable, that an High-flown Fancy in its greatest Sublimity could have produced into the World.

But who those lucky persons were that first invented it, themselves and all other Authentick Authors have left Succession in ignorance of; and consequently their Memories have lost those due Celebrations that their Merits have justly deserved.

Nor are we onely ignorant of the Persons that first invented Letters, but of the Time wherein they were first invented. And though smaller matters of great Antiquity stand recorded for the Information of

Po.

Posterity, yet no other certainty have we of the Time, than that they were ^{INTENDED} before any History was writ.

All the light we have of its Original is among Fabulous Authors, who attribute it to several Persons, and some of them no less than Gods; but their Authority being denied, their Say-so stands for no Proof.

I might Amplifie this Discourse by saying somewhat of the *Hieroglyphicks* of the *Egyptians*, and the several Characters of other Nations; but they are largely handled by others, and are alien to my purpose: for my Intentions are onely to insist upon three sorts of Characters, which are commonly used in Print among us, *viz.* the *Roman*, the *Italick*, and the *English* Letters.

Nor are the Originals of these three sorts of Letters certainly known, but that we received the *Roman* Letters from the *Romans*, the *Italick* from the *Italians*, and the *English* is that Character which is handed down to us from our Forefathers in their Records and other Manuscripts.

How much Printing has improved the Regularity and Beauty of these Letters is visible by comparing Printed with Written Letters; but especially the curious Printing of *Holland*, which does indeed of all others merit the greatest Applause, it being from the drawing of the Steel Punches to the pulling off at the Press managed with greater Curiosity than hitherto any Nation hath performed it. Neither is it strange it should be so: For, if I may be pardoned for the Excursion, I will say, There is one general Cause why they must, and several particular Reasons why they may, out-do all other Nations in this and other Handicrafts.

dicaſis which will yield them a Profit. The general Cauſe is the Neceſſity of their Countrey, which forces them to deal by Whole-sale in all Manufactures. And this Cauſe draws in the particular Reaſon; for by this means Manufactures are ſo improv'd, that moſt rare Artiſts flock thither as to a Market, where they are likely to find Trading. And it muſt neceſſarily follow, that where ſo many Curious Artiſts meet, each, for his Profit, or Credit, or both, ſtrives to out-do the other. And by this means Art muſt needs be more improved there, than in thoſe Countries where the Emulation of a Competitor is no Spur to Perfection.

I finding therefore that the *Holland Letters* in general are in moſt eſteem, and particularly thoſe that have been cut by the Hand of that Curious Artiſt *Chriſtofel van Dijck*, and ſome very few others, have elected them for a Patern in *Romans* and *Italicks*, and have given you thoſe Proportions and Dimensions they obſerved. Even as *Vitruvius* did by his Columns; for he finding, that among the many ſorts of Columns that were ſtanding in his time, Five onely were moſt acceptable, viz. the *Tuſcan*, *Dorick*, *Ionick*, *Corinthian*, and *Composite*, ſurveyed their exact Dimensions, and called that Survey, *The Rules of the Five Orders of Architecture*: which Rules are followed to this day; but had elſe doubtleſs ere now been loſt or at leaſt corrupted.

The *Roman Capitals* have already been treated of by *Albert Durer*; but he medled neither with the Small Letters nor *Italicks*. Nor were theſe Proportions in mode in his time; for he makes his Stem one tenth of the length, when-as now the Stem is made much fatter, for it is one ſixth part of the length, which

which does not onely adde a great Grace to the Letter, but renders it more easie to the Eyes in Reading, and more durable either for Inscriptions or Records.

It is possible my Pains and Endeavours may lie under the Censure of Detracting *Momes*, who neither know, or are capable to learn the Excellency of Rule and Proportion; and account those Fantasticks that either prescribe or follow them: For, say they, what needs all this ado about Letters, when every Painter or Mason can make them well enough without these Directions? And if they are not so exact Print Hand, yet they may very well be read, and are as significant as if they were made by these Rules.

In answer I may say, that every Carpenter can build a great Fabrick; but if he have not consulted the Rules of Architecture, it is very likely his Building may be preposterous, his several Offices unapt, and his whole Structure deficient, ungraceful, and ridiculous. But since we all strive to make Columns and other Ornaments in Architecture by Rules, because they should be strong, beautiful, and graceful to the Eye, 'tis surely necessary that the Inscriptions (which are commonly placed in the Architrave or some other eminent place) should be likewise regular and beautiful, lest they disgrace both Builder and Building too.

When the Stadthouse at *Amsterdam* was finishing, such was the Curiosity of the Lords that were the Overseers of the Building, that they offered *C. van Dijk* aforesaid 80 Pounds Sterling (as himself told me) onely for drawing in Paper the Names of the several Offices that were to be painted over the Doors, for the Painter to paint by. Now had these Rules been

been published in that time, every Painter might indeed have done them as well as *van Dyck* himself. For where many Figures are made by the same Rules, every one shall be like every one, although they are made by several Hands. So that I hope no Artists will grudge either at the Rules, or Price of the Book, since by it they may easily arrive to the same Perfection of Letters, as he did who was worthily accounted the best.

But this I will say too, that, though these Letters were doubtless first invented and contrived to be made with Rule and Compass, (and now doubtless somewhat debauched from their original Invention,) yet after an Artificer hath implanted these general Rules in his Memory, and used his Hand to the making of these Letters, he may be able to perform this Work very well without running over all these Prescriptions. Besides, the very Draughts of the Letters will shew him what parts of a Letter must be fat or lean, straight or circular.

Now before I begin with the particular Rules of each Letter, I think it fit to explain the Meaning of some Terms, that will be convenient to be used in this Practice; and also to give you an account of the Method to be observed in the Making of Letters. As,

1. Among Letters some are *Capitals*, some are *Small*. The *Capitals* are the Great Letters, therefore called *Capitals*: as *A, B, C, &c.* are *Capitals*.

2. *Small* are those Letters that in long Discourses follow the *Capitals*: as *a, b, c, d, &c.* are *Small Letters*.

3. Among the *Small Letters* some are *Long*, and some are *Short*.

4. The *Long* are the *Ascendents* and *Descendents*.

5. The *Short* are those that stand between the *Head* and *Foot-line*, such are a, c, e, m, &c.

6. All the *Capitals* are *Ascendents*, so called because they stand higher than the *Head-line* of the *Short*. And among the *Small Letters* some are *Ascendents*, as b, d, h, i, k, l; these reach up to the *Top-line*.

7. *Descendents* are those that stand lower than the *Foot-line*: such as are g, p, q, y; these reach down to the *Bottom-line*.

8. *Long* are those that stand as high as the *Ascendents*, and as low as the *Descendents*; viz. reach up to the *Top* and down to the *Bottom-line*: such as are J, Q, f, j, s.

9. The *Length* is the Distance between the *Top* and *Bottom-lines*: as the Distance o, 42 in Letter A is the *Length*.

10. The *Head-line* is the upper line that bounds the *Short Letter*: as Parallel 30 in *Romans* and *Italicks*, and Parallel 33 in the *English*, is the *Head-line*.

11. The *Foot-line* is the lower line that bounds the *Letter*: as Parallel 12 in the *Romans* and *Italicks*, and Parallel 9 in the *English*, is the *Foot-line*.

12. The *Top-line* is the line that bounds the top of the *Ascending Letters*: as Parallel 42 is the *Top-line*.

13. The *Bottom-line* is the line that bounds the bottom of the *Descending Letters*: as Parallel 9 is the *Bottom-line*.

14. The *Stem* is the straight fat stroke of the *Letter*: as in B the upright stroke on the left hand is the *Stem*, and Capital I is all *Stem*, except the *Base* and *Topping*.

15. *Fat*

15. *Fat strokes.* The *Stem* or Broad stroke in a Letter is called the *Fat stroke*, as the Right Hand stroke in Letter A, and the great Arches in Letter B, are *Fat strokes*.

16. *Lean strokes* are the narrow strokes in a Letter, as the Left Hand stroke in Letter A, and the Right Hand stroke in V, are *Lean*.

17. The *Footing* is the small Arches the Letter stands on, as the Arches upon the feet of Letter A is the *Footing* of that Letter.

18. The *Tapping* is the small Arch above the Letter, as the Arches in the Tops of the Letter V are the *Tappings* of that Letter.

19. The Divisions that are imagined to be made between the Top and Bottom-line are called *Parallels*, and numbered upwards with 1, 2, 3, to 42 in Letter A at the Left Hand, and so of all other Letters.

20. The Divisions that are imagined to be made between the Left Hand and the Right are called *Erects*, and numbered from the Left Hand to the Right with 1, 2, 3, 4, &c.

21. These Divisions are all along throughout this Book called *Parts*: as when I say, Set off 1, 2, 3, &c. Parts, I mean set off so many of these Divisions or Parts, either in the imagined Parallel or Erect.

22. The Distance between one word and another is called a *Space*.

23. A *Space* is 7 parts of the whole Length of the Letter: as the whole Length is 42, so a *Space* is 7 of 42, which is the sixth part of the Length.

*Some Rules to be followed in the Making
of Letters.*

1. The *Length* is divided into 42 Equal parts; from the *Bottom* to the *Foot* is 12 of them in *Romans* and *Italicks*, and in *English* 9, as aforesaid.

2. From the *Bottom* to the *Head-line*, as in Letter a, is 30 of them, and in Letter a 33. From the *Bottom* to the *Top* is all the 42. So that a *Short Letter* of *Romans* and *Italicks* stands between Parallel 12 and Parallel 30, and in *English* between Parallel 9 and 33.

3. The *Stem* and other *Fat* strokes of *Capitals Roman* is 5 parts.

4. The *Stem* and other *Fat* strokes of *Capitals Italic* is 4 parts.

5. The *Stem* and other *Fat* strokes of *Small Roman* is 3 parts.

6. The *Stem* and other *Fat* strokes of *Small Italic* is 3 parts.

7. Of *English* the *Short* stand between 9 parts at the *Bottom*, and 9 parts from the *Top*, as aforesaid.

8. The *Stem* of *English Capitals* is 6 parts.

9. The *Stem* of *English Small Letters* is 4 parts.

10. If these Letters are made with a Pen, this general Rule is to be observed, That in making them you begin where the Letter may be quickest made. As for Example, If you would make M, you must begin at the *bottom* on the Left Hand; for then without moving the Pen off the Paper you make the whole Letter at once, all but the *Footings* and *Top-pieces*, and then you will find the course and progress of

of the Pen will make those strokes *Lean* which should be *Lean*, and those strokes *Fat* which should be *Fat*. For as the Pen goes upwards, its Nib strikes a *Lean* stroke; but as it comes down its Nib opens wider, and strikes a *Fatter* stroke. So that whatever Tool a Letter is made with, you are to consider it as made with a Pen, and to allow it its *Fat* and *Lean* strokes accordingly. But in this the Copies of the Letters themselves will more fully instruct you.

11. You must take special care that you allow the Letter its full length: for because none of the Capitals but the Consonant J and Q are *Descendents*, you may be apt to think that in some cases, where the Inscription is all Capitals, you may drive up the *top* of the under-line above the *bottom* of the line above it; yet if a Consonant J or Q should come in the matter, you must be forced to shorten it, and so lose its grace. But besides, the whole Inscription will not shew so fair and beautiful, as if this convenient Space be allowed it. And if any *Ascending* Letters should happen under the J or Q, there would be no room for their Heads.

12. When I direct you to set off 1, 2, or 3 parts, &c. you are to understand it for 1, 2, or 3 parts of the Erect line or the Parallel line.

Some Considerations to be had in the ordering of Inscriptions, &c.

If your Inscription be very short, and you have more room to draw it in than you need, you were best make your Letters in *Roman* or *Italick* Capitals, because you may allow to leave two Spaces between every

ry Letter in the same word. But then you must remember to leave four Spaces at least between each word; for else there will not be distinction enough between Word and Word proportionable to the distinction between Letter and Letter. And you may allow 12 *parts* void between Line and Line, besides the 12 *parts* that are in all Capital Letters (except Q and J) void between the *Foot* and *Bottom-lines*.

But if you have not too much room, you may leave but one *Space* between every Letter in a Word, and two or three *Spaces* between every Word.

If your Inscription must be *Capitals*, and you are pinched for room, you may (but it is not so graceful) leave no *Space* between Letter and Letter; and then one or two *Spaces* between a Word will serve. This by Printers is called *Getting in*, or *Setting close*. But by no means you must put *Spaces* between Small Letters in the same Word; but you must put one or sometimes two between each Word.

If your Inscription belong, you were best use the *Small Roman* Letters, because they are much thinner, and are indeed more easily read, and more familiar than *Capitals*. But you must be sure to use a *Capital* Letter in the beginning, and in all Proper Names either of Persons or Places, and many times of things if they bear *emphasis*.

Remember also, if your Inscription be *Roman*, and the Names of Persons or Places fall in, you must make the Names *Italick* Letters, beginning them with a *Capital* Letter, and sometimes as you would dignifie a Person or Place make the whole Name in *Capital* Letters.

If your Inscription be *Italick*, the Proper Names must be *Roman*.

If your Inscription be *Latine*, the small *Roman* is the proper Letter for it ; but the Proper Names must be *Italick*, and sometimes *Italick Capitals*, as aforesaid ; unless it be the Name of some Vulgar place or thing, for which there is no *Latine* Name, then that Name or Word is to be in *English* Letters ; but the first Letter a *Capital*, or (for the Reason aforesaid) all *English Capitals*.

Be sure to forecast, that in a large Inscription of a continued *series* of Discourse, each Line be exactly of the same length ; unless it be where a Break is proper to be made, for then you may end either in the middle or any where else of the Line. Or unless your Inscription be in Verse, for then also you may end at any length. Yet take notice, that it is not graceful to end a Break with a short word onely in a line, because it seems too like a White-line. But to remedy that inconvenience you may allow more *Spaces* between the words in the former two or three Lines, that so you may have a Word or two the more in your Break-line.

When you begin new matter after a Break, you must indent your Line four *Spaces* at least, and make the first Letter a *Capital*.

When you draw a Title over an Inscription, you must consider the words of *emphasis*, and make those words to vary from the Letter your Discourse is in, as either *Roman*, *Italick*, or *English*, according as the words may properly require. But of this and several other Observations of this nature I have written more at large in a Book I intend to publish of the whole Art of Printing. Yet for your present Instructions I shall give you some Examples of Monuments, &c.

Therefore it will be very necessary you design and draw your Inscription first on Paper, and then either pounce or draw it through by Redding, or Blacking the Backside of your Paper, and drawing pretty hard upon the Out-strokes of your Letter with the point of a Needle, made blunt, smooth, and round, for then the Red or Black on the backside of the Paper will deliver it self upon the Wood or Stone that it is to be engraven or painted on. But if the Stone be so smooth and hard that it will not receive and take off the Red or Black, you may rub your Stone over with a little Bees Wax gently, and it will take off the Tracings very exactly.

JOANNES SELDENUS
Hic juxta situs. Natus est 16 Decemb. MDLXXXIV.

Salvintonia,

Qui viculus est Terring Occidentalis in

Suffexia Maritimis,

Parentibus honestis,

JOANNE SELDENO THOMÆ Filio è. quinis
secundo,

Anno MDXLI. nato;

&

MARGARETA Filia & Herede unica THOMÆ

BAKERI de Rushington, ex Equestri

BAKERORUM in Cantio Familia,

Filius è. cumis superstitum unicis,

Ætatis ferè LXX. Annorum.

Denatus est ultimo die Novemb. Anno Salutis

reparate MDCLIV.

Per quam expectat

RESURRECTIONEM Felicem.

ROWLANDUS JEWKES

Executorum Testamenti

MAGNI SELDENI

è quatuor unus,

Spe certâ Resurrectionis futuræ per CHRISTUM ad
gloriam,

Exuvias Carnis suæ prope Cineres ejusdem

S E L D E N I

Hic juxta reponi, vivens, curavit, excessit,

Anno { Æræ Christianæ MDCLXV.
 { Ætatis suæ LXXVII.

Cum Christus, qui est vita nostra, apparebit,

nos etiam apparebimus cum eo in gloria.

C

If

IF these following Precepts do not exactly agree with all present Practice, yet will I not determine whether Practice ought or no to give way and comply with these Precepts and Patterns; since tis plain that these Letters were originally contrived under these or some such Rules. And though some of these Letters may with greater study be reduced to shorter Rules, yet because my leisure will not permit me to do it, I leave it to those that have more Time and better Invention, and deliver these according to my Observations on them.

A

Divide the whole Erect Depth of 42 into 42 equal parts, and set off the same Divisions in the bottom-line; then in the Parallel of 12, viz. the Foot-line, set off 16 from the left hand towards the right, and from thence erect a Perpendicular unto the Top-line. From either side this Perpendicular set off 10 in the Foot-line: then in this Perpendicular at Parallel 38 make a Prick, (as at Fig. 1.) then by the side of a Ruler laid to this Prick, and the two Tens set off in the Foot-line on either side the Perpendicular draw two straight lines for the sides of A, but continue the right hand straight line to Parallel 39, (as at Fig. 2.) Then set your Compasses to 1, and set off that distance from the left hand the Perpendicular in Parallel 39, and set off the same distance in the Foot-line from the left hand inside stroke of A towards the left hand, and draw a straight line through these two points to be the outer bounds of the breadth of the left hand stroke of A. The breadth of the right hand stroke

is 5 parts. Therefore in the Point where the two inside strokes of A meet, (as at Fig. 1.) place one foot of your Compasses (being set to 5) and with the other describe the occult Arch 3, 4. Then place one foot of your Compasses at the right hand stroke of the inside of A in the Foot-line, and with the other describe the occult Arch 5, 6. Then lay your Ruler to the outer Convex points of these two occult Arches, and by the side of it draw a straight line from the Top-line to the Foot-line, for the outward bounds of the right hand stroke of A. Set off 1 in the Top-line from the outer bounds of this right hand stroke towards the left, (as at 3) and draw a straight line in the Top-line to that point; set your Compasses to 3, and placing one foot in this point, with the other describe an occult Arch towards the left hand; then place one foot of your Compasses in the Point where the inside of the right hand stroke meets with the outside of the left hand stroke of A, and with the other foot describe another occult Arch towards the right hand, to cut the former occult Arch, and the Point where they cut each other shall be the Centre, (as at Fig. 7.) whereon you may describe the hollow Arch in the head of A. Draw two straight lines in Parallel 24 $\frac{1}{2}$ and 24 $\frac{1}{2}$ between the two insides of A. Lastly, from both sides each side of A set off 5 in the foot-line or Parallel of 12, then set your Compasses to 15, and in the Erects of those Fives place one foot of your Compasses, and with the other describe four Arches to the out and insides of A for the footing.

Here you may see the Fat stroke is 5 parts broad, and the Lean strokes are 1 part broad, and each footing is 5 parts in the Foot-line from its respective side.

The same rule and order is to be observed in all the *Roman Capitals*. C 2 Draw

a

to Draw a Parallel at 12 for the Foot, and at 30 for the Head. Erect 0 is the bounds of the Head and belly of a. Set your Compasses to two Stems, viz. 7 parts 3, and placing one foot of them in Parallel 23 $\frac{1}{2}$, and Erect 6 (as at Fig. 1.) describe with the other foot the Arch for the outmost bounds of the Head of a. Then set your Compasses to one Stem, viz. 3 $\frac{1}{2}$, and placing one foot in Parallel 25, and Erect 5 $\frac{1}{2}$, (as at Fig. 2.) describe with the other foot the inner Arch of the head of a. Remove one foot of your Compasses to Parallel 15 $\frac{1}{2}$, erect 3 $\frac{1}{2}$ (as at Fig. 3.) and with the other describe the Arch for the outer belly of a. Remove one foot of your Compasses in the same Parallel to Erect 7, (as at Fig. 4.) and with the other foot describe the Arch for the inner belly of a. Remove one foot of your Compasses in the same Parallel to Erect 12, (as at Fig. 5.) and with the other describe a Semicircle for the outer bounds of the tail of a. Joyn this Semicircle by a straight Erect line to the Arch which makes the inside the head of a. Then set your Compasses to half the Stem, viz. 1 $\frac{1}{2}$, and placing one foot in the same Parallel, viz. 15 $\frac{1}{2}$, Erect 13 $\frac{1}{2}$ (as at Fig. 6.) with the other foot describe the Arch for the inside the Tail of a. Joyn this Semicircle by a straight Erect line to the Arch, which makes the outside the Head of a, your Compasses being set as before to 1 $\frac{1}{2}$, place one foot in Parallel 25 $\frac{1}{2}$, Erect 1 $\frac{1}{2}$, (as at Fig. 7.) Describe the Arch for the Dot in the Head of a. Make a Prick in Parallel 20, and in the Erect of the inside of the Stem, and from that

that Prick draw a straight line to the Convexity of the outer belly of a. Work in the inner belly to this straight line; joyn the lower part of the belly by a straight line drawn to the inside the Stem in Parallel 15; so is a finished. Here you may perceive, that the several Arches whereof this Letter is made, have their *Radius*, Stems, and parts of a Stem: As the *Radius* of the first Arch is 2 Stems, the *Radius* of the second, third, fourth, fifth Arches are 1 Stem, the *Radius* of the sixth and seventh, is half a Stem.

B

Divide the whole Depth into 42, as afore in A. The Topping and Footing is 5 Erects, and the Stem 3 more. Set your Compasses to 7, and placing one Foot in Parallel 34; on the right hand side of the Stem, (as at Fig. 1.) describe with the other the inner Arch of the upper belly of B. Remove one Foot of your Compasses to Erect 15 in the same Parallel, (as at Fig. 2.) and with the other describe an Arch for the outer bounds of the upper belly of B: Set your Compasses to 7½, and placing one Foot in Parallel 20, Erect 12, (as at Fig. 3.) describe with the other Foot the Arch for the inner bounds of the lower belly of B. Remove one Foot of your Compasses in the same Parallel to Erect 17, (as at Fig. 4.) and with the other describe the outer Arch of the lower belly of B. Set your Compasses to 15, and placing one Foot in Parallel 27, erect 0, with the other describe the Arches for Topping and Footing. Joyn the Arches of the Bellies Arches to the Stem at the Top, Middle, and Foot, by hand, (as you see in the Projection) by strokes of

of half a part broad, but so as the lower belly have nothing of the stroke fall in it, because it must be half a part bigger than the upper belly.

b

The Beak projects 1. Stem on the left hand, viz. $3\frac{1}{2}$ parts, as do all other Projecting Letters in the Small *Roman*. Therefore in Parallel 40 erect o, make a Prick for the Angle of Projecture. Then in Parallel 38; erect 3; make another Prick for the left hand bounds of the Stem; between which 2 Pricks draw a straight line. Make another Prick in Parallel 42. Erect 7 for the right hand bounds of the Stem, and draw another straight line between the first Prick and this last; so is the Beak made. Then in Parallel 12 Erect o, set off $3\frac{1}{2}$ and 7, and from Erect $3\frac{1}{2}$ at the under side of Projecture draw a straight line to $3\frac{1}{2}$ set off in Parallel 12, and another straight line from Erect 7 at the upper side of Projecture to Erect 7 in Parallel 14; so is the Stem made. Then set your Compasses to 9, and placing one Foot in Parallel 21, Erect 12; (as at Fig. 1.) Describe with the other Foot the outer Arch of the Belly. Then set your Compasses to 8, and placing one Foot in Parallel 21, erect 10, (as at Fig. 2.) with the other Foot describe the inner Arch of the Belly. Set then your Compasses to 4, and placing one Foot in Parallel 10 erect 7, (as at Fig. 3.) with the other describe a small Arch under the Stem; so is b finished.

C

Set your Compasses to 15, and placing one Foot in Parallel 27 Erect 15, (as at Fig. 1.) with the other describe a Circle: Cut off half a Stem, *viz.* 2½, of this Circle on the right hand with a Perpendicular line, which Perpendicular must reach from the Top-line the breadth of a Stem below the Circle, and from the Foot-line the breadth of a Stem above the Circle, *viz.* 5 parts. Remove your Compasses 5-Erects further, *viz.* the breadth of the Stem in the same Parallel to Erect 20, (as at Fig. 2.) and describe so much of a Circle as will be comprehended between your left hand and the two Perpendiculars, which cut off a part of the former Circle. To describe the great Arches of the Buttings set your Compasses to 15, and placing one Foot in the Parallels of the extreme inner points of the Buttings at 15 distance towards the left hand, (as at Fig. 3, 4.) with the other point describe the Arches of Buttings. Then set your Compasses to half the breadth of a Stem, *viz.* 2½, and one Foot placed successively in the Top and Foot-lines at the Buttings of C, with the other describe the small Arches at the Top and Foot of the outside of C; so is C finished. Onely you must take care to work in the Intersections of these Circles by hand at the Top and Foot; so must you also the small Circles in the Top and Foot.

C

Set your Compasses to 9, and placing one Foot in Parallel 21, Erect 9, (as at Fig. 1.) with the other Foot describe a Circle. Cut off a whole Stem, *viz.* $3\frac{1}{2}$ of this Circle on the right hand with a Perpendicular line. Set off $3\frac{1}{2}$ from the left side this Circle towards the right in the Parallel of 21. Then set your Compasses to 8, and placing one Foot in Parallel 22, erect 11 $\frac{1}{2}$, (as at Fig. 2.) Describe with the other Foot an Arch within the former Circle and the Perpendicular; then set your Compasses to half the Stem, *viz.* 1 $\frac{1}{2}$, and placing one Foot where the Perpendicular intersects the Circle in the Head, (as at Fig. 3.) Describe with the other Foot so much of a small Circle downwards, as will be between Parallel 26, and 28 $\frac{1}{2}$, to make the Dot. And the breakings of these Circles you must by Hand work into the Head.

D

Topping and Footing is 5 Erects, the Stem five more, both made as so much of Letter B. Set your Compasses to 15, and placing one Foot on the right hand line of the Stem in Parallel 27, with the other describe a Semicircle towards your right hand. Remove your Compasses the breadth of the Stem, *viz.* 5 towards the right hand in the same Parallel, and describe another Arch towards the right hand; work these Arches by hand up to the Stem, leaving the Lean strokes at the Top and Bottom 1 part; so is D finished.

The

d

The Belly of d is made like c, all but the Dot in the head, which d hath not. The Projecture or Beak of the Stem is made like b, but the bottom of the Stem differs; for d hath a Tail which is as long as the Stem is broad, viz. $3\frac{1}{2}$, from the right hand line of the Stem of d. This Tail is a straight line proceeding from the bottom of the left hand line of the Stem, whose end is raised two parts above the Foot-line. The line of the Tail that proceeds from the right hand line of the Stem, is a straight line parallel to the Foot-line.

E

Topping and Footing is 5 Erects, the Stem 5 more; both made as Letter B. The Top-stroke is from the right hand line of the Stem half the length of the Stem, viz. 15; the middle stroke is $\frac{1}{2}$ of the length of the Stem, viz. 10. The Bottom-stroke is $\frac{1}{2}$, viz. 18 parts. The breadth of the Head and Foot-stroke is thus made; set off the breadth of the Stem, viz. 5, from the end of each stroke towards the left hand, in the Parallel of each stroke, and in the Erect line of these settings off set off $1\frac{1}{2}$ between the Topping and Footing, and draw a straight line from the lower point of the Arch of Topping on the left hand the Stem, and from the upper point of the Arch of Topping on the left hand the Stem to the $1\frac{1}{2}$ set off as aforesaid. Then at the right hand ends of these

D

lines

lines set off by occult Arches 5 in their respective Erects. And set off 5 in the Erects of the Perpendicular ends of the Top and Foot-stroke, and placing one Foot of your Compasses successively at these 5, with the other Foot describe occult Arches to cut the former occult Arches, and the point where these occult Arches cut each other (as in Fig. 1; 2.) shall be a Centre, whereon you may describe Arches for the Buttings of the Top and Bottom-stroke of E. For the thickness of the middle stroke set off half a part upwards, and half a part downwards from the middle Parallel at the right hand line of the Stem; and from thence draw Parallel lines 5 parts long; then set off 1 upwards and 5 downwards from the end of the middle stroke; from these two 5 and the ends of the Parallels of thickness describe occult Arches of Circles to intersect each other, and the Intersections (as Fig. 3, 4.) shall be the Centres whereon (the Compasses set to 5) the Arches of Butting shall be drawn.

e

Set your Compasses to 9, and placing one Foot in Parallel 21, Erect 9. Describe with the other the outer Arch; then in the Parallel of 9 set off 3 $\frac{1}{2}$ for the Fat stroke. Set your Compasses to 8, and place one Foot in this 3 $\frac{1}{2}$, and pitch the other Foot where it will leight, in the Parallel of 21 towards the right hand, (as at Fig. 2.) On this point describe the inner Arch of e; then in the Parallel of 21 draw a line for the Eye, from the inside of e to the outside on the right hand. But the Fatness of the Eye must be half a part at the right hand side of e; therefore

in.

in 23; from the outward right hand Arch draw a line to the point where the former line touches the inside of e. Then measure the Fatness of the left hand Arch of e in the Parallel of 24, and set off that Fatness from the right hand Arch of e inwards, and setting your Compasses to 8, place one Foot in the measure of Fatness so set off, and pitch the other Foot where it will fall in the Parallel of 21; towards the left hand; on this point describe the inner Arch of the right side of e. The Angles of the Intersections of these Arches make you must smoothen by hand.

F

Is made like E, onely instead of the Foot-stroke here is onely a Footing, made as hath been taught in A, B, D.

f

The Stem is 3½, and runs on the left hand straight upwards to Parallel 36, and on the right hand it runs straight upwards to Parallel 40. Set your Compasses to 7, and placing one Foot in Parallel 35, Erect 10, (as at Fig. 1.) With the other Foot describe an Arch for the Top of f. The Top of f must be half a part thick; therefore set your Compasses to 4½, and placing one Foot in Parallel 37, Erect 11½, (as at Fig. 2.) With the other describe the under Arch of the Head of f; then set your Compasses to 1½, viz. the thickness of half a Stem, and placing one Foot in Parallel 38, Erect 14, (as at Fig. 3.) With the other describe

the Arch for the Dot of f. The stroke is half a part thick, the upper line of it lies in the Head-line, viz. Parallel 30. It projects on the left hand half a Stem, viz. $1\frac{1}{2}$, and on the right hand a whole Stem, viz. 3. The Footing is made by setting your Compasses to 9, and placing one Foot in Parallel 21, Erect 0, and in Parallel 21, Erect $10\frac{1}{2}$. With the other Foot describe the Arches of Footing. The Breakings and Wants in the Arches you must work in by hand.

G

Is made like C till you come to the short Stem whose right hand line lies in the Erect Butting, and its left hand line is made by setting off 5 to the left hand. The Foot of G is wrought in by setting your Compasses to 18, and placing one Foot in Parallel 15 in the Erect of Butting, with the other describe an occult Arch towards your left hand upwards in G, then remove one point of your Compasses in the same Parallel towards the right hand, where that Parallel cuts the inner Circle of G, and with the other point describe an occult Arch to cut the former, (as at Fig. 3.) and that point of Intersection shall be the Centre whereon you may describe an Arch to work in the inner Circle of the Foot of G. To work in the outer Circle place one Foot of your Compasses again in the Parallel of 15, in the Erect of Butting, and with the other describe an occult Arch as before. Then remove one point of your Compasses in the same Parallel towards the right hand, where that Parallel cuts the outer Circle of G, and with the other describe an occult Arch to cut the former, (as at A.) and that

that point of Intersection shall be the Centre, whereon you may describe an Arch to work in the outer Circle of the Foot of G. The Topping of the short Stem lies in Parallel 22 $\frac{1}{2}$, 5 being set off from both sides the Stem, as hath been taught in B, D, &c.

g

Set your Compasses to twice the Stem, *viz.* 7 parts, and placing one Foot in Parallel 23, Erect 8, (as at Fig. 1.) with the other describe a Circle for the outer bounds of the Head. Remove your Compasses in the same Parallel to 3 $\frac{1}{2}$ on the right hand, and 3 $\frac{1}{2}$ on the left hand this Centre, (as at Fig. 2, 3.) and describe the Arches for the inner bounds of the Head. Set your Compasses to 4, and placing one Foot in Parallel 14 $\frac{1}{2}$, Erect 6 $\frac{1}{2}$, (as at Fig. 4.) describe the outer Arch between the Head and Belly of g; set your Compasses to 1 $\frac{1}{2}$, and placing one Foot in the point where this Arch touches the Head, turn the other Foot into Parallel 16, (as at Fig. 5.) and on that point as on a Centre describe the inner Arch between Head and Belly of g. Then from Parallel 14 $\frac{1}{2}$ Erect 5, and Parallel 13 Erect 14, draw a straight line, and from Parallel 11 Erect 3, and Parallel 10 Erect 14; draw another straight line, which two straight lines shall be the Waste of g. Then set your Compasses to 7 $\frac{1}{2}$, and placing one Foot in Parallel 7 $\frac{1}{2}$ Erect 10 $\frac{1}{2}$, (as at Fig. 6.) Describe the right hand outer Arch of the Belly. Set your Compasses to 5 $\frac{1}{2}$, and placing one Foot in Parallel 6 $\frac{1}{2}$ Erect 11, (as at Fig. 7.) describe the right hand inner Arch of the Belly; set your Compasses to 7, and in placing one Foot in Pa-

Parallel 7^h, Erect 10^h, (as at Fig. 6.) Describe part of the left hand inner Arch of the Belly of g. Set your Compasses to 8, and placing one Foot in Parallel 8, Erect 8, (as at Fig. 8.) Describe another outer Arch on the left hand side of the Belly; set your Compasses to 6, and placing one Foot in Parallel 5, Erect 6, (as at 9.) With the other describe the outer Arch under the Waste of g on the left hand. Remove your Compasses to Parallel 24^h, Erect 18^h, (as at Fig. 10.) and describe an Arch for the upper bounds of the Nose of g. Remove your Compasses to Parallel 22^h, Erect 16^h, (as at Fig. 11.) and describe the under Arch of the Nose. Set your Compasses to half the Stem, viz. 1^h, and placing one Foot in Parallel 27^h, Erect 16, (as at Fig. 12.) Describe the small Arch for a Dot on the Nose. The Intersections and Breakings of the several Arches you must work in by hand, as you may see by the Letter it self.

H

Has two upright Stems with Toppings and Footings, which are made like the Stems of other Capitals. These two Stems must stand the breadth of four Stems asunder, viz. 20 parts. They are joynd just in the middle between Head and Foot, with a straight Parallel line half a part broad.

h

The Stem of h is made like the Stem of b, onely it has Footing on both sides. The Footing hath the breadth of the Stem on either hand, viz. 3 parts, and is made like the Footing of Capitals. The width between the inside the two Stems is 2 parts. Stems, viz. 8 parts. To make the Arches that joyn these two Stems together, divide the distance between the inner stroke of the left hand Stem and the outer stroke of the right hand Stem into two equal parts, and set off that distance in the Erect in the middle between them from the Head-line, viz. Parallel 30. downwards; and placing one point of your Compasses there, (viz. at 1.) with the other describe an Arch to reach from the left hand Stem to the right hand Stem. Then divide the distance between the two inner sides of the Stem into two equal parts, and placing one Foot of your Compasses in the middle between the two Stems and in the same Parallel the former Arch was strook, (as at 2.) with the other Foot describe the under Arch of h. The right hand side of the Stem of h and its Footing are made as before.

I

Set off 3 Stems in the Foot-line in Parallel 12; one for the left hand Footing, another for the Stem, another for the right hand Footing. Do the like in the Top-line, and between the Topping and Footing draw the Stem. The

i

The Stem of i is made like the Stem of h, but is not so long, for it stands between Parallel 12 and 30. The Tittle stands right over the Stem, half a Stem lower than the Top-line, and its Diameter is one Stem, *viz* $3\frac{1}{2}$ parts.

J

The Stem and Topping of this J is made like I, but half way between the Foot and Bottom-lines the right hand stroke begins to fall away into an Arch of a Circle, which we call a Tail in Letters, whose Semidiameter is two Stems; therefore your Compasses being set to two Stems, *viz*. 10. place one Foot in Parallel 10 in the Erect of the Topping, which is two Stems from the right hand stroke of J, (as at 1) and with the other Foot describe an Arch for the Bottom of J. Then set your Compasses to one Stem, *viz*. 5, and in Parallel 5, and the same Erects, (as at 2.) describe another Arch for the inner Arch of the Bottom of J; then set your Compasses to $2\frac{1}{2}$, *viz*. half a Stem, and place one Foot in Parallel 3, Erect $2\frac{1}{2}$, (as at 3) and with the other describe the Dot of J.

j

The Stem and Tittle of this j is made like i. The Semidiameter of the lower Arch of its Tail is two of
its

its Stems, *viz.* 7. whose Centre lies two Stems from the Bottom-line, *viz.* in Parallel 7 in the Erect of its Beak, (as at 1.) The Semidiameter of its inner Arch is one Stem, *viz.* $3\frac{1}{2}$, and its Centre lies in $3\frac{1}{2}$ in the same Erect, (as at 2.) The Diameter of the Dot is one Stem, and its Centre lies in Parallel $2\frac{1}{2}$, Erect 14.

K

The Stem of K is made like I. It branches upwards from the middle of the Stem into Parallel 42, *viz.* the Top-line. The outside of the Top of its Branch is distant in the Top-line from the inside of the Top of the Stem 15 Erects, *viz.* 3 Stems, and the inside the Branch is 14 Erects from the Top of the Stem; so that a straight Ruler laid to these two points successively, and to the middle length of the Stem, describes this upper Branch. The lower Branch is as broad as the Stem, *viz.* 5 parts, and hath its inner Footing one Stem, *viz.* 5 parts, distant from the Footing of the Stem. Therefore set your Compasses to 5, and placing one Foot in the middle of the inside the Stem, with the other Foot describe an occult Arch, (as at 1.) Then remove your Compasses to the point in the Foot-line where the inside of the lower Branch cuts it, and describe another occult Arch, (as at 2.) Then lay a straight Ruler to the Convex points of these two Arches from the upper Branch to the Foot-line; then set off on either side these two Branches 5 for the Topping and Footing, and in the Erects of these several settings off describe the Topping and Footing.

[30]

k

The Stem of k is made like the Stem of h; its upper Branch proceeds from the right hand line of the Stem in Parallel 21, which is equally between the Head and Foot-line. The outside the Head of the Branch is distant in the Head-line $8\frac{1}{2}$ from the Stem, viz. two Stems and an half; and the inside of the Head of the Branch is distant 8 from the Stem in the Head-line; so that a straight Ruler laid successively to these two distances, and to the point in the Stem from whence this Branch proceeds, gives the upper Branch. The inside the lower Branch is distant from the Stem $8\frac{1}{2}$ in the Foot-line, and the outside the lower Branch is distant $12\frac{1}{2}$ from the Stem in the Foot-line. Therefore draw a straight line from the point where the upper Branch joyns to the Stem $8\frac{1}{2}$ in the Foot-line, and that shall be the inside lower Branch. Draw another straight line Parallel to this straight line at $3\frac{1}{2}$ distance, (as the occult Arches (1,2.) shew, and that shall be the outer bounds of the lower Branch. The Heading and Footings are made as K aforesaid, onely instead of 5 Erects from the in and outside the Branches you must now make but $3\frac{1}{2}$.

L

Is made like the Stem and Foot-stroke of E.

1

Is made like the Stem of h.

M

The left hand stroke is 1 broad, and the right hand stroke is a Stem, *viz.* 3. The insides of these Shanks stand 25 asunder, *viz.* 5 Stems. The rest is V all but the inside Toppings, which are left out. And you must note, that the left hand line of the outer bounds stands at the Top in the Erect of the left hand line of the left hand Shank. Topping and Footing hath been taught before.

m

The first Stem is made like i. The second and third Stem and their Arches are made like the second Stem and Arch of h.

N

The two upright strokes are each 1 broad, and their insides are 20 asunder. The Diagonal is made by setting off from the outer stroke on the left hand towards the left hand 1 in the Top-line, from whence a straight line drawn to the outer bounds of the right hand stroke in the Foot-line gives the lower

E 2

bounds

Bounds of the Diagonal. The upper bounds are made by setting your Compasses to 5, and placing one Foot successively in the lower line, (as at Fig. 1.) with the other Foot describe occult Arches, to the Convex points of which a straight Ruler laid, and a line drawn by the side of it, shall be the upper bounds of the Diagonal. The Toppings are made as before.

n

Is the two first Stems of m.

O

The outer bounds of O is an exact Circle. The Fatning is made by setting off 5 on either side the Centre in the same Parallel, for these settings off shall be the Centres, on which you must describe Arches for the inner bounds of O; onely you must work in the Intersections of the Arches by hand.

O

Is an exact Circle, and hath its Fatnings as O, onely the Fatnings must be but 3 $\frac{1}{2}$, because it is a small Letter.

P The

P

The Stem is made like I, all but the right hand Topping is left out. Its Head is made by setting your Compasses to $7\frac{1}{2}$, viz. one Stem and an half, and placing one Foot in Parallel $34\frac{1}{2}$, which is $1\frac{1}{2}$ Stem from the Top-line; Erect $16\frac{1}{2}$, (as at Fig. 1.) with the other Foot describe an Arch from the Top-line for the outer bounds of the Head. To describe the inner bounds set off 5 in the Parallel of $34\frac{1}{2}$ towards the left hand for the Fatning. Then set your Compasses to 7, and placing one Foot in the part set off for the Fatning; pitch the other Foot in the Parallel the former Centre lies in, (as at 2.) and describe the inner Arch. But because these Arches reach not home to the Stem, you must make up the Top and Underneath with straight lines drawn to the Stem.

p

The Stem of p is made like the Stem of h. But h is an Ascending Letter, and therefore hath its Stem reaching up to the Top-line; and p is a Descending Letter, and hath its Stem reaching down to the Bottom-line. The Belly of p is made upon three Centres. The Arches of the Belly of p are Arches of a Circle; the Centre of the outer Arch lies in Parallel 21, Erect 12, (as at 1.) The inner Arch is made by the setting off a Stem from the outer Arch inwards in the Parallel 21, and bringing this setting off and

and the two points where the outer Arch joyns to the Stem into an Arch of a Circle, as you were taught. For first the Compasses set to 9, place one Foot in Parallel 21, Erect $12\frac{1}{2}$, (as at 1.) and with the other describe a Circle for the outmost bounds of the Belly of p. Then set your Compasses to 8, and place one Foot in Parallel 21, Erect $10\frac{1}{2}$, (as at 2.) and with the other describe an Arch that shall reach from the Stem at the Head to Erect $12\frac{1}{2}$; then remove your Compasses to Parallel 21, Erect 9, (as at 3.) and describe an Arch for the remainder of the inner bounds of the Belly of p.

Q

Hath its Body made like O. The Rump of the Tail is made by drawing a straight line from Parallel $12\frac{1}{2}$ Erect 13, to Parallel 4 Erect 27, and another straight line parallel to it, as you were taught in the lower Branch of K, at the breadth of a Stem from the Body of Q to Erect 30. From this straight Rump the Tail arches and diminishes to the end. It is arched and diminished thus : In Parallel 5 Erect 66, make a mark for the end of the Tail ; then set your Compasses to 52, and placing one Foot in Parallel 4, Erect 27, describe an occult Arch ; then remove your Compasses to Parallel 8, Erect 30, and describe another occult Arch ; then remove your Compasses to the point made for the end of the Tail, and describe an occult Arch that shall intersect the two former occult Arches, and those two Intersections (as at Fig. 45.) shall be the Centre whereon you may describe Arches to finish the Tail of Q.

q The

q

The Belly of q is a Circle to the Stem. The fatning of the left hand side is made by setting off one Stem in the Parallel, that the Centre of the outer Arch lies in, (as at 23) then describe an Arch to comprehend the part of Fatning set off, and the two points where the outer Arch joyns to the Stem, as was taught. The rest of the Stem and Footing is made like several other Letters before.

R

The Stem, Head, and Footing of R is made like P. The inner side of the Branch proceeding from the Head stands at the Head 2 $\frac{1}{2}$ distant from the Stem, where make a Prick; and at the Foot 9 distant from the Stem, where make another Prick. Between the set two Pricks draw a straight line, and draw another straight line Parallel to it the breadth of a Stem, as you were taught in the lower Branch of K.

r

The Stem of r is made like the Stem of i. To make the small Branch proceeding from the Stem set your Compasses to half the Stem, viz. 1 $\frac{1}{2}$, and placing one Foot in Parallel 28 $\frac{1}{2}$, Erect 14, describe the small Circle for the Dot of the Branch. Then divide the Parallel distance between the Centre of the Dot and the

the left hand stroke of the Stem into two equal parts, and placing one point of your Compasses in the Head-line, direct the other point on the Erect of the Division made before, between the Centre of the Dot and the left hand stroke of the Stem, (as at 1.) and on that Centre describe the upper Arch to joyn the Dot and Stem together. To describe the under Arch divide the distance between the Dot and right hand side of the Stem into two equal parts, and set that off from the Stem in the Parallel of the former Centre, (as at 2.) and describe the under Arch of the Branch. Footing is made as before.

S

Here are four Circles made to draw S, and the Centres of them all lie in the same Erect. To describe the first Circle set your Compasses to $8\frac{1}{2}$, and placing one Foot in Parallel $33\frac{1}{2}$, Erect $8\frac{1}{2}$, (as at 1.) with the other Foot describe a Circle. Set your Compasses to $5\frac{1}{2}$, and placing one Foot in Parallel $35\frac{1}{2}$, (as at 2.) with the other Foot describe a second Circle. Set your Compasses to 9, and placing one Foot in Parallel 21, Erect $8\frac{1}{2}$, (as at 3.) with the other Foot describe a third Circle. Set your Compasses to $6\frac{1}{2}$, and placing one Foot in Parallel $18\frac{1}{2}$, (as at 4.) with the other Foot describe a fourth Circle. I need not teach you how these Circles are wrought into an S, because the Letter it self shews you plainly. But the Buttings at Top and Foot are thus made: Set off at the Interfection of the first Circle with the Erect of the third Circle 5 downwards, and from thence draw a straight line into the Top-line; from this
straight

straight line set off in the Top-line 5 towards the left hand, and by two occult Arches made on these two points in the Top-line you will find a Centre, (as at Fig. 5.) whereon (your Compasses set to 5) you may describe the Arch for the Hollow of the Head of S. For the Butting and Hollow at the Foot draw a straight line through the left hand verge of the first Circle into the Foot-line, and in Parallel 21, (which is the Parallel wherein the Centre of the third Circle lies) make therein a Prick for the upper end of the Butting, from thence draw a straight line in the same Erect into the Foot-line for the whole Butting; from this point of Butting in the Foot-line (your Compasses set to 5) measure into the third Circle, and on these two points describe two occult Arches, whose Intersections shall be a Centre, (as at Fig. 6.) whereon you may describe the Hollow at the Foot of S. How the Tail of S falls off from a Circle towards the Butting you may perceive by the Letter it self, and accordingly work it in by hand.

S

Draw an Erect line, and on it set off half a part at the Head, and half a part at the Foot, for the thickness of the Head and Foot of s. Then set your Compasses to 3, and measuring in the same Erect from the point set off at the Head, you have the Centre of the inner Circle of the Head of s; from the bottom of this inner Circle set off 3, viz. one Stem in the Erect. Then set your Compasses to 3, and measure in the same Erect from the point set off for the thickness of s, at the Foot you have the Cen-

Arch

F

tre

tre of the inner Circle of the Foot. Set your Compasses to half the distance between the Top of this Circle and the Head of s, and that half distance shall be the Centre whereon you may describe the outer Circle of the Head. Set your Compasses to half the distance between the bottom of the inner Circle and the Foot-line, and that half distance shall be the Centre whereon you may describe the outer Circle of the Foot. For the Dots at Head and Foot set off one Stem, viz. $3\frac{1}{2}$, from the Head and Foot-line, that is, in the Parallels of $14\frac{1}{2}$ and $26\frac{1}{2}$; and where that setting off the inner Circles of Head and Foot, shall be the Centre whereon the Compasses set to $1\frac{1}{2}$, you may describe Circles for the Dots.

f

Is made like f, only instead of a stroke quite through the Head-line, here is only a Beak proceeding from the left hand to the Stem in the Head-line. This Beak or Projecture is made like the Projecture of other Letters; only the line of the Beak that runs into the Head-line is drawn on the left Head-line of the Stem.

T

The Stem and right hand Top-stroke of P is made like the Stem and Top-stroke of E, and the left hand Top-stroke of T is the same with the right hand Top-stroke, only the Buttings must be made on the left hand.

t

Hath the Top of the right hand stroke of its Stem reach $3\frac{1}{2}$, viz. one Stem above the Head-line. The stroke through the Head is half a Stem broad, and Projects on either side the Stem 1 Stem. From the left hand end of the stroke draw a straight line to the Top of the right hand stroke of the Stem. Both sides the Stem run straight down to Parallel 15. The Arches of the Tail are thus drawn: Set your Compasses to $5\frac{1}{2}$ and placing one Foot in $17\frac{1}{2}$ Erect $8\frac{1}{2}$, (as at Fig. 1.) Describe an Arch to reach from the left hand side of the Stem through the Foot-line into the Parallel of 15, where the Tail shall end; then set your Compasses to one Stem, viz. $3\frac{1}{2}$, and describe occult Arches from the Tail, and the lower end of the right hand line of the Stem, and where these two occult Arches intersect each other, (as here at Fig. 2.) shall be the Centre whereon you must describe the inner Arch of the Tail.

V

In Erect $17\frac{1}{2}$ Erect a Perpendicular from the Foot-line into the Top-line. Set off from this Perpendicular in the Top-line $12\frac{1}{2}$ towards the left hand, and $12\frac{1}{2}$ towards the right hand; from these two points draw straight to the Perpendicular in the Foot-line for the outer bounds of V. Set your Compasses to 5, viz. one Stem; describe an occult Arch upon some convenient point of the left hand line near the

Top, (as at Fig. 1.) Then remove your Compasses to some convenient point near the Foot-line, (as at Fig. 2.) and describe another occult Arch. From the outer verge of these two occult Arches draw a straight line for the inner right hand stroke of V; then set your Compasses to 1, and on the right hand stroke describe two other occult Arches, and draw a straight line by their verges for the inner line of the right side stroke of V. The Toppings are made like the Footings of A, and several other Letters.

V

In Erect 10; Erect a Perpendicular into the Head-line, and from it set off 7 towards the left hand in the Head-line, and 7 towards the right hand; from these two points draw straight lines into the Foot-line. For the outer bounds set off from the left hand line one Stem, viz. $3\frac{1}{4}$ towards the right hand in the Head-line, and describe two occult Arches upon some convenient points of the left hand line, (as at Fig. 1, 2.) From the verges of these two occult Arches draw a straight line for the inner line of the left side; then set off $\frac{3}{4}$ from the right hand line in the Head-line towards the left hand, and describe other occult Arches upon some convenient points of the right hand line, (as at Fig. 3, 4.) and from the outer verges of these occult Arches draw the inner line of the right side of v. The Heading is made like the Heading of k.

U

U is $26\frac{1}{2}$ wide in the Top between the outer bounds. The left hand side is 5 broad, and runs straight down to Parallel $25\frac{1}{2}$. The right hand side is $1\frac{1}{2}$ broad at the Top, and 1 at the Parallel of $25\frac{1}{2}$. Set your Compasses to $13\frac{1}{2}$, and placing one Foot in Parallel $25\frac{1}{2}$, Erect $23\frac{1}{2}$. Describe the outer Arch: Set your Compasses to $10\frac{1}{2}$, and placing one Foot in Parallel $25\frac{1}{2}$, Erect $23\frac{1}{2}$, describe the inner Arch. The Topping make as you have been taught before.

u

The first Stem is made like i, but it rounds at the Foot as h, m, n, do at the Head. The second Stem is sometimes made straight without a Beak, as it is here; sometimes with one made like the former. Its Tail is made like the Tail of d.

W

Is V V, onely the left side of the second V lies over the right side of the first in the Top-line.

W

The same with W, onely you must observe the Dimensions of v.

X Set

X

Set off 5 in the Top-line, and 20 in the Foot-line, and draw a straight line between these two points. Draw another line towards the right hand Parallel to it by occult Arches the breadth of a Stem. Then set off 25 in the Top-line, and 6 in the Foot-line, and draw a straight line between these two points, draw another line parallel to it towards the right hand, by occult Arches the breadth of 1. The Toppings and Footings are made as before.

X

Set off $3\frac{1}{2}$ in the Head-line, and 14, viz. four Stems, in the Foot-line, and draw a straight line between these two points; draw another line parallel to it towards your right hand, by occult Arches the breadth of a Stem, viz. $3\frac{1}{2}$; then set off $16\frac{1}{2}$ in the Head-line, and $3\frac{1}{2}$ in the Foot-line, and draw a straight line between these two points; draw another line Parallel to it towards the right hand, by occult Arches the breadth of half. The Toppings and Footings are made as before.

Y

Erect a Perpendicular from the Foot-line into the Top-line, and set off in the Top-line on either side 8. Then in Parallel 27 make a Prick in the Perpendicular

cular from these two settings off in the Top-line draw straight lines to the Prick in the Perpendicular for the inner bounds of Y. Set your Compasses to 5, and on the ends of the left hand line describe two occult Arches, through whose Convex points draw a straight line from the Perpendicular into the Top-line for the outer bounds of the left hand side. Then set your Compasses to 1, and on the ends of the right hand line describe two other occult Arches, through whose Convex points draw another straight line into the Top-line, for the outer bounds of the right side. Then set off in the Foot-line and Top-line 1 on the right hand the Perpendicular, and 4 on the left hand the Perpendicular, and by a Ruler laid to the settings off on either side the Perpendicular draw straight lines from the Body of Y into the Foot-line. The Footing and Topping is made as before.

Y

Erect a Perpendicular from the Foot-line into the Head-line, and set off on the left hand 3, and on the right hand 7 in the Head-line, from the setting off on the left hand describe an occult Arch of 1 Stem, draw a straight line from the Foot-line at the Perpendicular through the Convex point into the Head-line, for the bounds of the left side of y; draw another line Parallel to this line, the breadth of 1 Stem for the inner bounds of the left side, from 7 set off on the right hand the Perpendicular in the Head-line set off half, and from thence draw a straight line into the Foot-line at the Perpendicular for the outer bounds of the right side of y. Draw another straight

straight line Parallel to it $\frac{1}{2}$ part towards the left hand for the inner bounds of y.

The Tail is an Arch which you may thus make: Under the outer left side Heading in the same Erect on the Bottom-line describe a Circle for the Dot of the Tail, whose Diameter shall be 1 Stem; then set your Compasses to 42, (the whole depth of a Letter) and placing one point almost at the Bottom of the right side the Dot, describe with the other Foot an occult Arch; then place one Foot of your Compasses at the lower Angle of the Body of Y, and with the other Foot describe another Arch to cut the former Arch, and where these two Arches cut each other shall be the Centre whereon an Arch described from the Dot to the Angle aforesaid shall be the outer bounds of the Tail. The inner bounds are made by describing an Arch Concentrick to the former. The Headings have been taught before.

Z

Set off 20 in the Top-line; from thence draw a straight line into Erect 0 in the Foot-line; then by occult Arches 1, 2, made towards the right hand, draw a line 1 Stem, viz. 5 parts, between the Top and Foot-line for the right hand line of Z. The Top and Foot-line are each 1 part thick. The Butting at the Top is made by setting your Compasses to 3, and drawing a straight line in Erect 0 from the Top to this setting off; then set your Compasses to 15, and placing one Foot in this setting off, with the other Foot describe towards the right hand an occult Arch, (as at 3.) Then remove your Compasses to

Parallel 41, Erect 1, and with the other Foot describe another occult Arch to cut the former, and where these two occult Arches cut each other is the Centre, whereon you may describe the hollow of the Buttings. The Buttings of the Foot-line is made by setting your Compasses to 5, and placing one Foot in Parallel 13 Erect 26; with the other Foot describe an occult Arch, (as at 5.) in that occult Arch in Erect 28; make a Prick, and laying a straight Ruler to this Prick and the right hand end of the Foot of Z, draw a straight line for the Butting. Then set your Compasses to 15 and 14; at the end of this straight line place one Foot of your Compasses, and with the other describe an occult Arch towards the Stem, (as at 5.) then remove your Compasses, and place one Foot in Parallel 13, 1 part from the end towards the left hand line of Butting, and with the other Foot describe another occult Arch to cut the former, and where these two occult Arches cut each other shall be the Centre, whereon you shall describe the hollow of the Butting of the Foot.

Z

Set off in the Head and Foot-lines 17½. Set your Compasses to 3½, viz. 1 Stem, and towards your right hand describe in the Foot-line an occult Arch, (as at 1.) Lay your Ruler to 17½; set off in the Head-line and to the Convex point of this Arch, and draw the right hand line of the Stem; then remove your Compasses to 17½ in the Head-line, and towards the left hand describe another occult Arch, (as at 2.) Lay your Ruler to Erect 0 in the Foot-line, and the

Convex point of this Arch, and draw the left hand line of the Stem. The Head and Foot-lines are half thick. The Butting at the Head is half above the Head-line; therefore set off half in the Erect o, and hollow it to the Head-line, as you were taught before by two occult Arches, (as at 3.) The other Buttings are made as the Head Butting of Z; but onely the Butting of the Foot is straight upright in this Letter, and in that it runs up aslope towards the right hand, as you may see by the Letters themselves.



Of all the Characters yet made this is the most troublesom, it having no less than 10 Centres in it, and consequently as many Arches. But thus it is made: Set your Compasses to $9\frac{1}{2}$, and placing one Foot in Parallel 21 $\frac{1}{2}$ Erect $9\frac{1}{2}$, (as at 1.) with the other Foot describe the under part of the arching Belly from Parallel 17 $\frac{1}{2}$ to Parallel 22; then set your Compasses to $8\frac{1}{2}$, and placing one Foot in Parallel 20 Erect $8\frac{1}{2}$, (as at 2.) with the other Foot describe the upper part of the arching Belly. Then set your Compasses to 8, and placing one Foot in Parallel 22 Erect 12, (as at 3.) with the other Foot describe an Arch for the inside of the Belly. Then set your Compasses to 5, and placing one Foot in Parallel 34 Erect $8\frac{1}{2}$, (as at Fig. 4.) with the other Foot describe almost a Circle for the outside of the Head; through this Circle draw a Perpendicular Diametral line, (as *a, b*) and from the point *a* set off in the Circle towards the left hand 2 parts, (as at *c*.) and set off 2 parts towards the right hand from *b* to *d* through the
Dia-

Diametral *c, d*, draw another Diametral line at right angles, as *e, f*. Then in the point where this Diametral line cuts the Circle of the Head, as at the point *e*, set off on the Diametral line $3\frac{1}{2}$, viz. one Stem, and with your Compasses set to 5, (as before) place one Foot in the Point set off, and extend the other on the Diametral line, and placing it there, with your first Foot describe the inner Arch of the Head on the left hand. Then set off also $3\frac{1}{2}$, viz. 1 Stem on the right hand from the Intersection of the Diametral and the Circle, and place one Foot of your Compasses (being set to 5) there, extending the other on the Diametral towards the left hand, and on that point with the other Foot describe the other inner Arch of the Head, which meeting of the two Arches at the Top and Bottom you must work into an Oval. Then set your Compasses to 32, and placing one Foot in the point where Erect 6 cuts the under part of the outer Circle of the Head, with the other Foot describe towards the Bottom-line on your left hand an occult Arch. And removing one point of your Compasses to Erect 17 Parallel 15, with the other Foot describe another occult Arch to intersect the former, (as at 5.) and on this point as on a Centre describe an Arch for the inside the Diagonal Stem. Then draw a straight line from the middle part of this Diagonal Stem, and set off on it from the Centre 5, $3\frac{1}{2}$, viz. 1 Stem, and placing one Foot of your Compasses as before, (as at Fig. 6.) with the other describe the outer Arch of the Diagonal Stem. The Tail of the Diagonal Stem is made by setting your Compasses to $6\frac{1}{2}$, and placing one Foot in Parallel 18, Erect 22, (as at Fig. 7. with the other describe the under Arch of the Tail as far as Parallel 15 Erect 27. The upper Arch

Arch of the Tail is made by setting your Compasses to 4, and placing one Foot in Parallel 17 Erect 24, (as at Fig. 8.) with the other describe it; onely the end of the Tail must be wrought into a sharp point. The Arch above the Diagonal Stem is made by setting your Compasses to 24, and placing one Foot in Parallel 33 Erect 11, (as at 9.) with the other describe the outer Arch. Then remove your Compasses to Parallel 33 Erect half less than 0, (as at Fig. 10.) with the other describe the inner Arch.

æ œ ct ft th

And other double Letters, I need not discourse on, because by these Paterns you may see how they are joyned together.

Having given you such full Instructions upon the Roman Capitals and Small Letters, I think it needles to give you Copious Rules upon the Italicke or English Letters, the Paterns being so large that every Member in them are distinct and intelligent; and the Manual Operations so much the same in all, that the Scales down the side and in the Bottom line serve for an ample Discourse upon every one of them.

Of Italicke Letters.

ITalicke Letters seem to be derived from the Roman, because its shape is so like the Roman, that its Members differ in very few Letters from it; onely the Stems of the Roman are perpendicularly upright, and the Bellies are circular, but in the Italicke the Stems

Stems are allope, and the Bellies are oval. The slope of the Stems are $\frac{1}{2}$ of the whole depth of the Letter, viz. 10; parts set off from a Perpendicular on the left hand in the Top-line, and a line drawn from the same Perpendicular in the Foot-line to the 10; in the Top-line, as in Letter *A, B*. From 1 to 2 is the slope of the Letter.

Those Letters that have Bellies, as *a, b, c, d, e, g*, have the inside of their Bellies Ovals, whose greatest Diameter is 18 parts, viz. the whole length of a Small Letter, and its least Diameter 6 parts; which Oval is so set aslope, that half a part lies below the Head-line, and $\frac{1}{2}$ parts above the Foot-line; so that working above the Oval into the Head-line, and below the Oval into the Foot-line, you may make the Fatness of the Head and Foot of the Belly; but how the Belly fattens downwards, you may best see by the Patterns themselves.

The Beaks of Letters project 3 parts, viz. 1 Stem from the Stem towards the left hand, and lie at the point of the Beak 1 part below the Top-line; so that a straight line drawn from the Top of the right hand line of the Stem to the point of the Beak is the upper bounds of the Beak; and 1 set off in the left hand line of the Stem under the lower bounds of the Beak is the thickness of the Beak, so that a straight line drawn from that point to the end of the Beak is the lower bounds of the Beak.

The Nose of Small Letters project also 3 parts, viz. one Stem from the Stem of the Letter, and the point of it lies three parts below the Head-line.

The Tails are made just like the Beaks, if you imagine the Foot were turned into the Head-line.

And therefore I have divided (like them) of

Of the English Letters.

THis sort of Letters by the Fatness of the Stems seems to be first invented for durable Records; For from these Letters seems to proceed the several Court-hands of Law, Chancery, &c.

Although the most parts of these Letters, but especially the Small, are straight lines, which are to be drawn by the side of a Ruler, yet are few of the Arches of the Capital Letters Arches of Circles, and therefore cannot well be described with Compasses, but are made without Geometrical Considerations, onely by Judgment and good Command of Hand; because the Inventers contented themselves to be directed rather by the Humours of the Pen (which oft differs according to the temper of the Quill and shape of the Nib, and a Traditional Observance, which cannot be equal in all Hands or Wits) than those nice Symmetrical Proportions which would have preserved them in all Ages in the same Youth and Beauty they were in at the first; whenas now not onely Manuscripts, but many printed Books differ in the shape of their Letters among themselves.

Therefore it is that these Paterns cannot be exactly agreeable with all English Letters; yet have I elected them which are now most in mode, and in my Judgment the best. Onely I have in some few parts (where I think all Ingenious Contrivers would acknowledge Error) corrected them.

The Fatnings, Returnings of Angles, Distances of Joynings, and other niceties, are better seen by the Paterns, than learnt by many words of Descriptions on them. And therefore I have divided (like the

Ro-

man) the Plain they stand on into 42 equal Parallel parts for the Depth, and through every sixth part you may draw a small straight line; and also divided the breadth or thickness of the Letter into so many equal parts called Erects, Parallel to each other, as is requisite; for each Letter you may also draw a small straight line downwards, so that the Parallel lines and these Erects may cut each other at right Angles, which will divide the Plain into so many Squares as each Letter is made on. And by these Squares you may observe how every Member and part of a Member in a Letter passes from the Top to to the Bottom-line, and from the right hand to the left, and by making a Plain with the same number of Squares, you may carry on the several strokes from Square to Square, as you find them in your Patterns.

But as I have given you full Instructions for the making the Roman Letters, so shall I give you some few Directions, which may serve to inform you in all the Rules that belong to these Letters, but especially of the Small, because they consist almost wholly of straight lines.

The Stem of the Capitals (as was said before) is 6 parts, the Stem of the Small Letters 4 parts. The Foot-line lies in Parallel 9, the Head-line lies in Parallel 33. The Return Angles of those straight lines that proceed from the Head-line and from the Foot-line are 4 parts, *viz.* one Stem below the Head-line, and 4 parts above the Foot-line.

The Fatness of the Stem is made by occult Arches placing one Foot of your Compasses on the Return Angles, as in 3 at 1 and 2, and with the other Foot describing the Arches 3 and 4; so that
a straight

A straight line drawn through the Convex points of these two Arches shall give the Fatness of the Return Angle. The like in all other Letters, as you have been taught in Roman Letters.

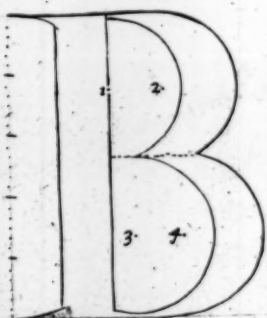
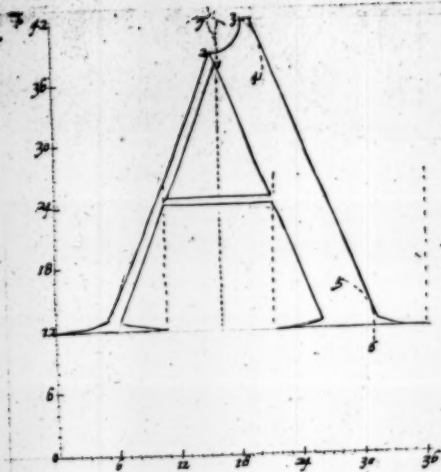
The Beaks of the Small Letters, as *b, h, k, l, f*, are 1 part broad and long, and end in a point. The upper Stroke of these Beaks proceed from the Head-line.

The Cloven Tops of *b, h, k, l*, project on the left hand 1 part over the Stem, and the point where it divides in the Stem lies in 1 below the Top-line, at 1 distance from the right hand side of the Stem, as you may see in the Paterns.

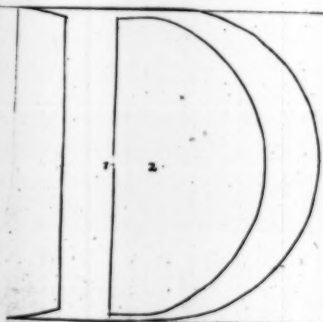
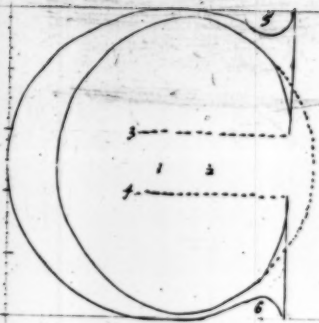
The strokes of *f, t, g*, lie in the Head-line and 1 part below it, projecting over the Stem 1 part on the left hand, and 2 parts on the right hand.

More Observations I think needless, because the Letters themselves are so demonstratively laid down on the Plain. Onely some have made all these Small Letters with little Beaks on the Angle of every Return, because the Humour of the Pen may be made to give them; but I account them Needless, Troublesom, and Affectations. Therefore I deliver them plain as they lie in the Squares, whereby they will stand more close, become more regular, be quicker made, and more distinct and intelligent to the Eye; yet such as affect them so may make them at their own discretion, by projecting on the Angles 1 part, as you are taught to do the Beaks.

F I N I S.



21/10/18



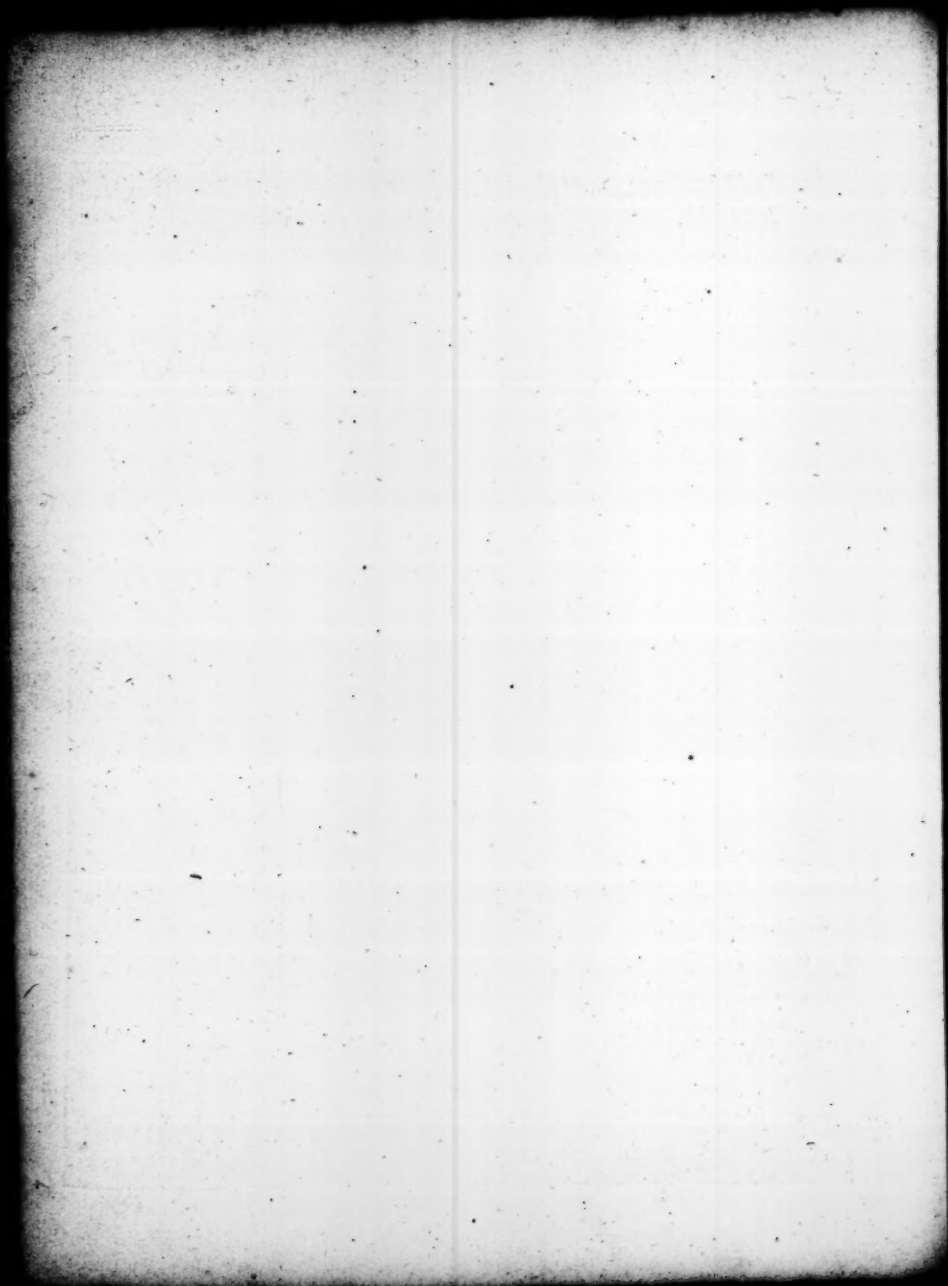


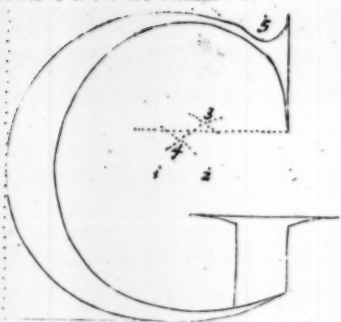
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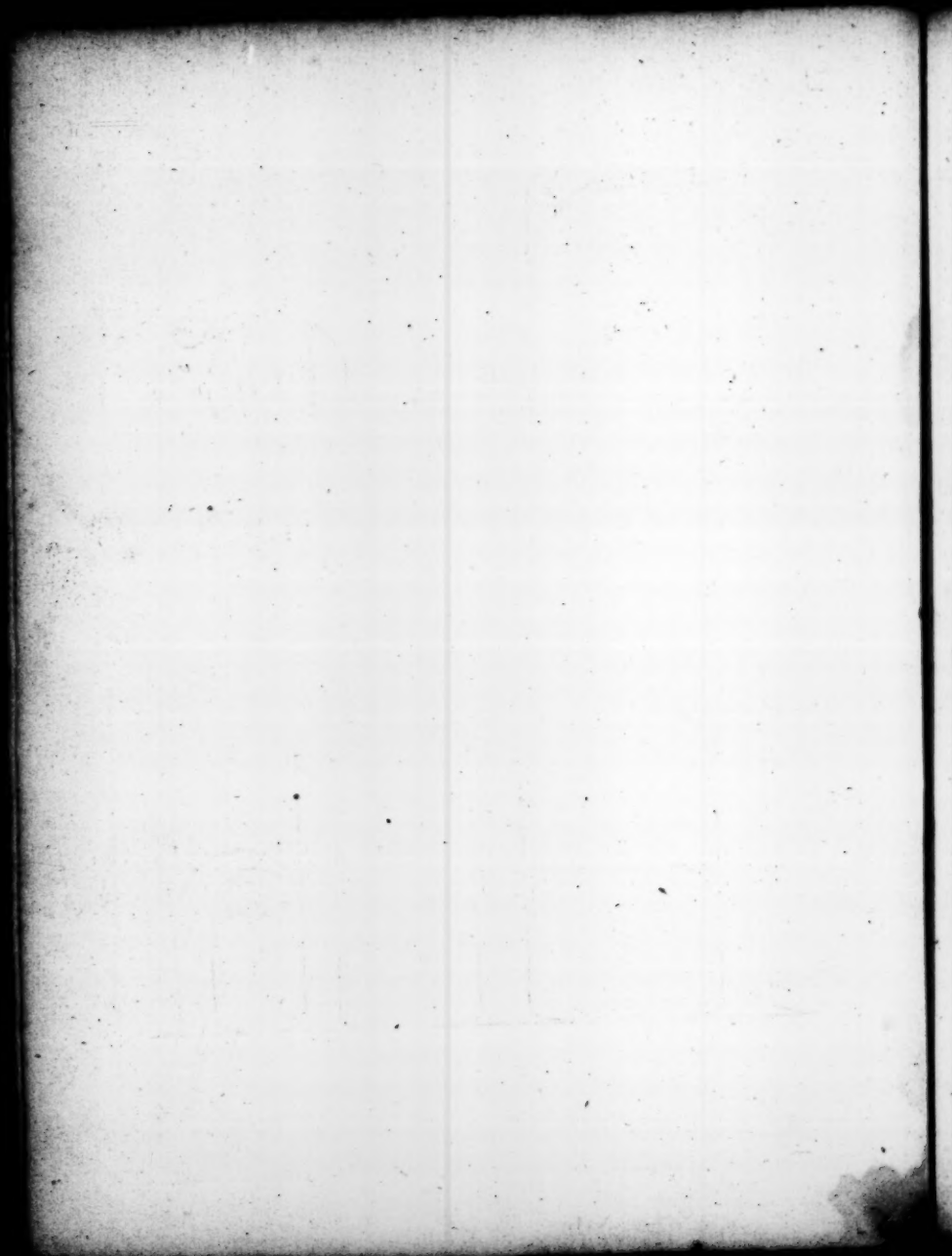
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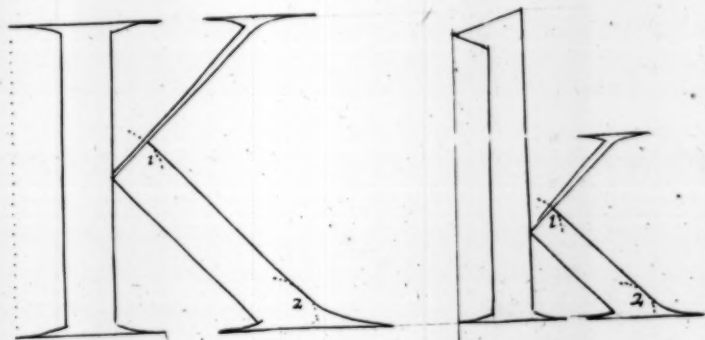
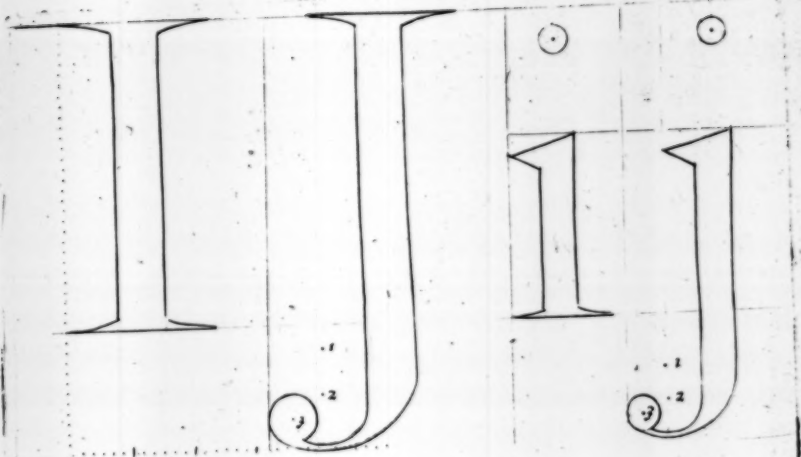
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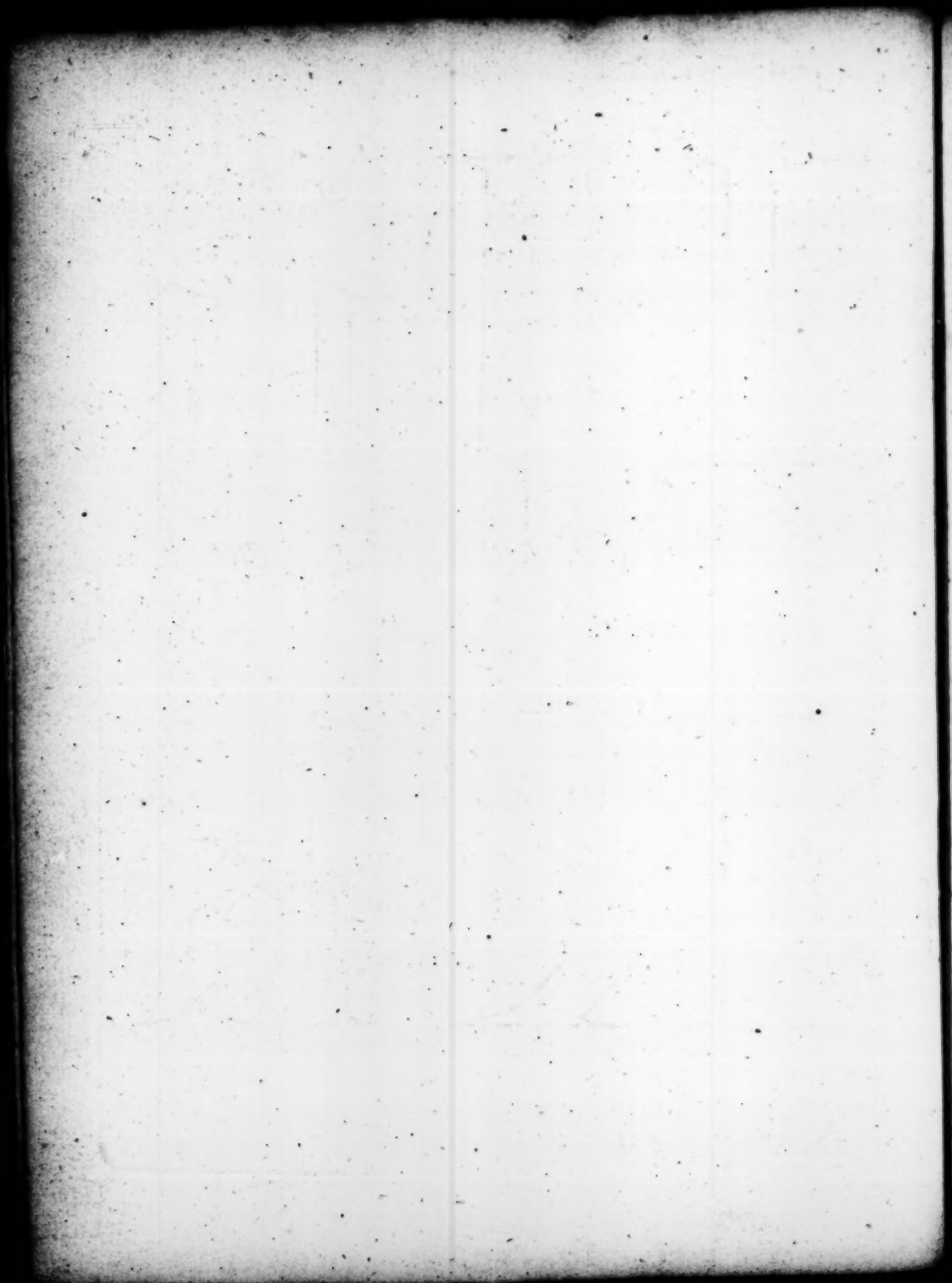
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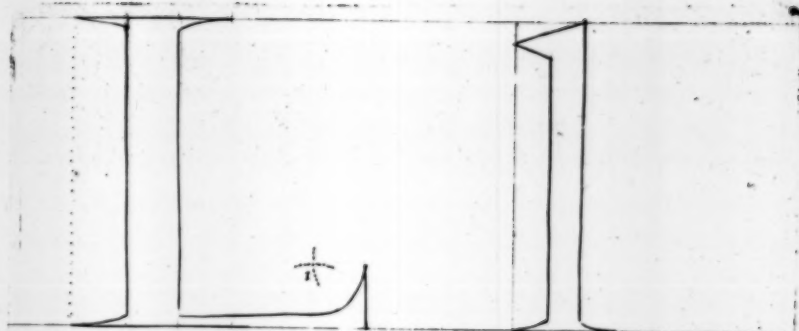


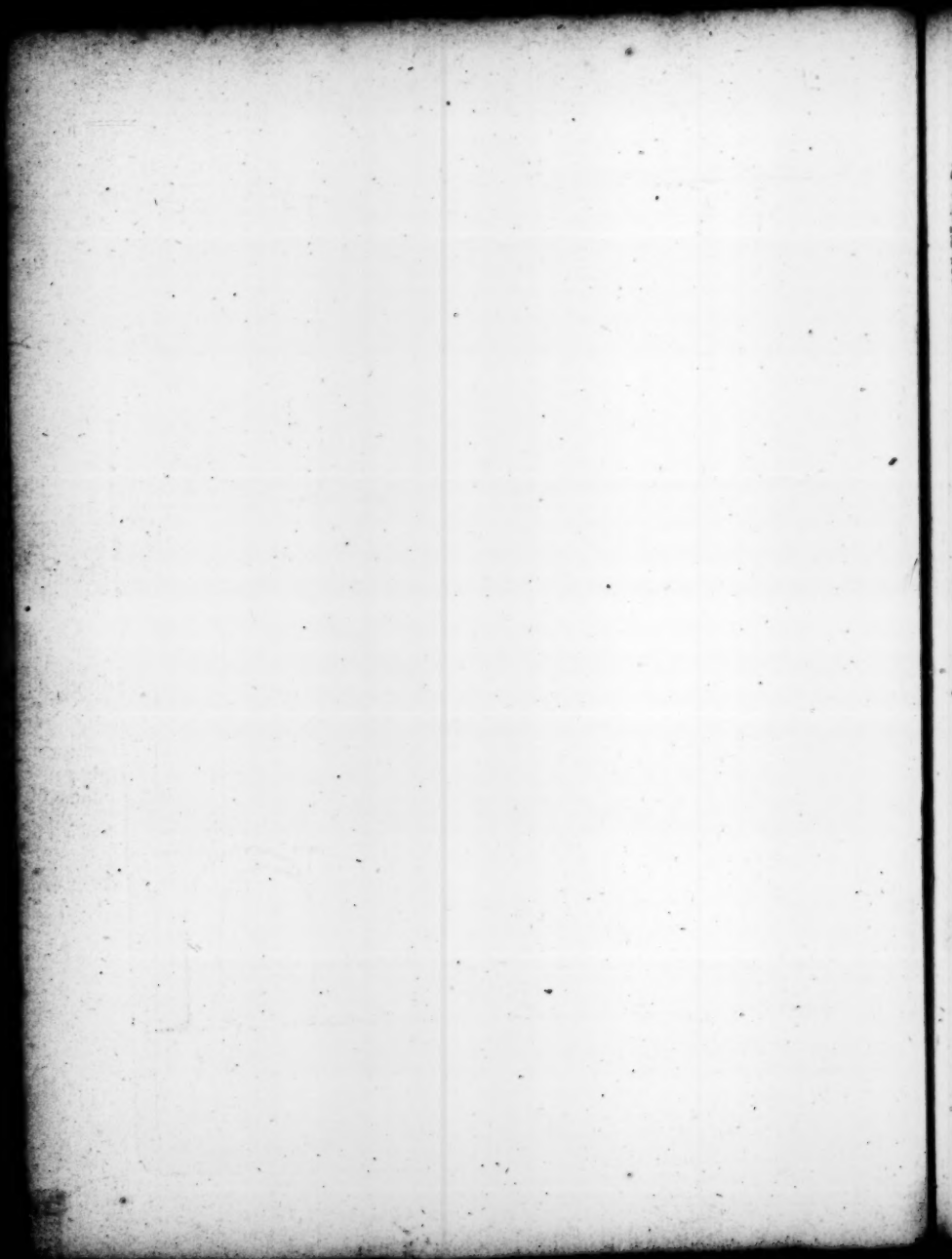




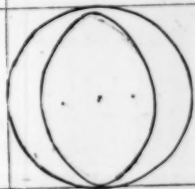
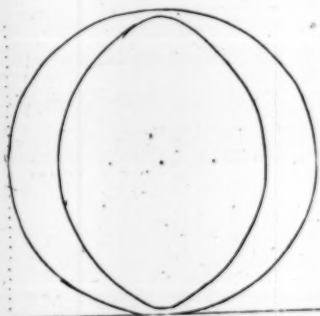


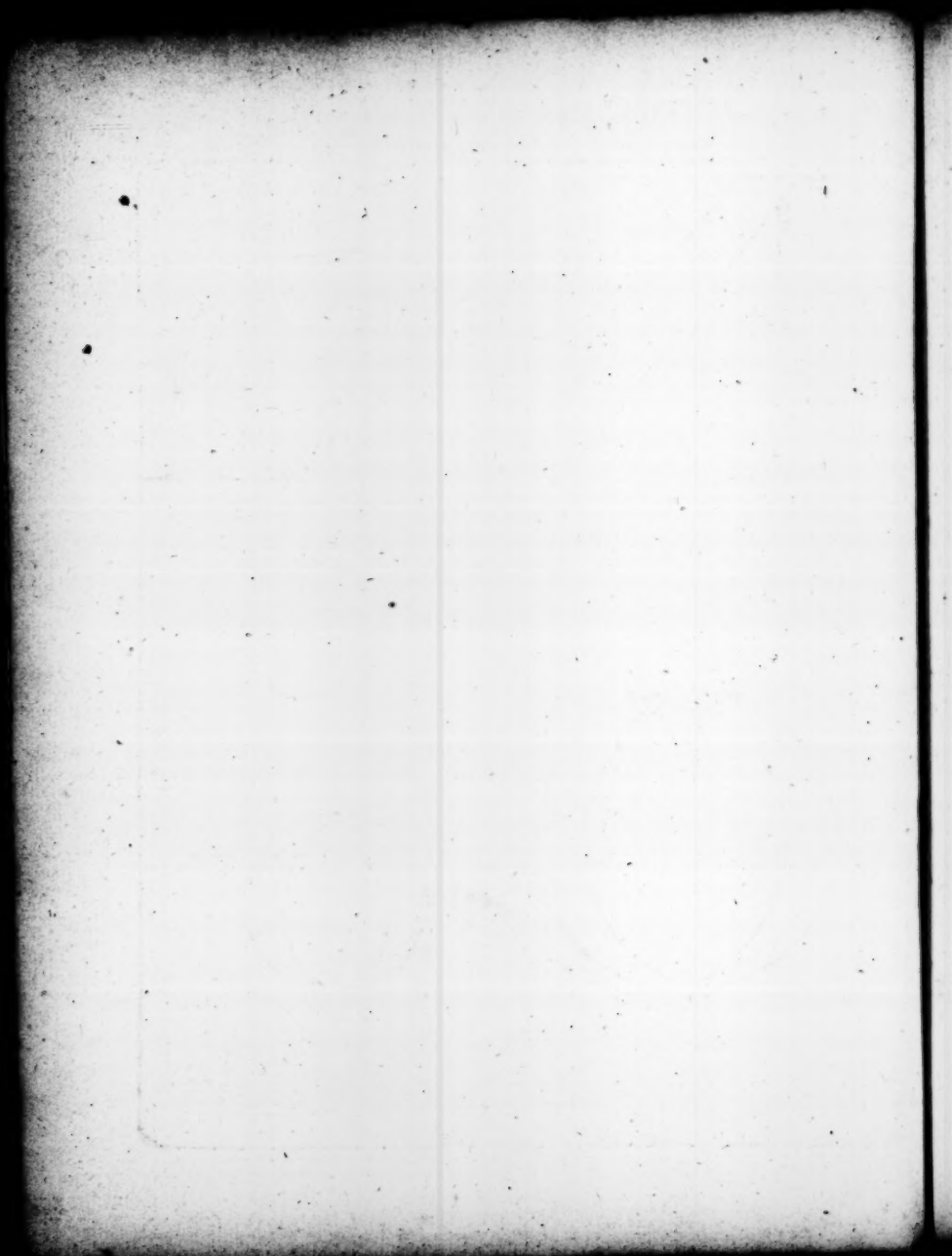


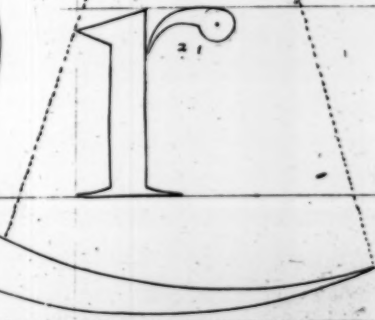
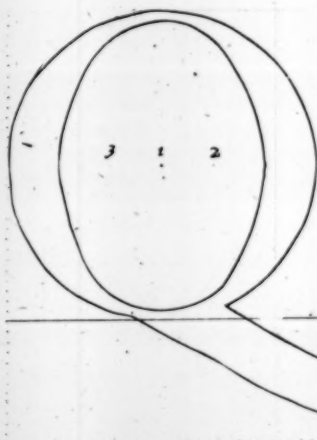
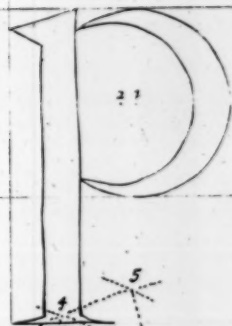
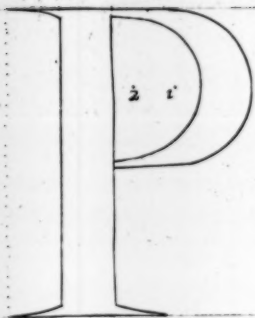


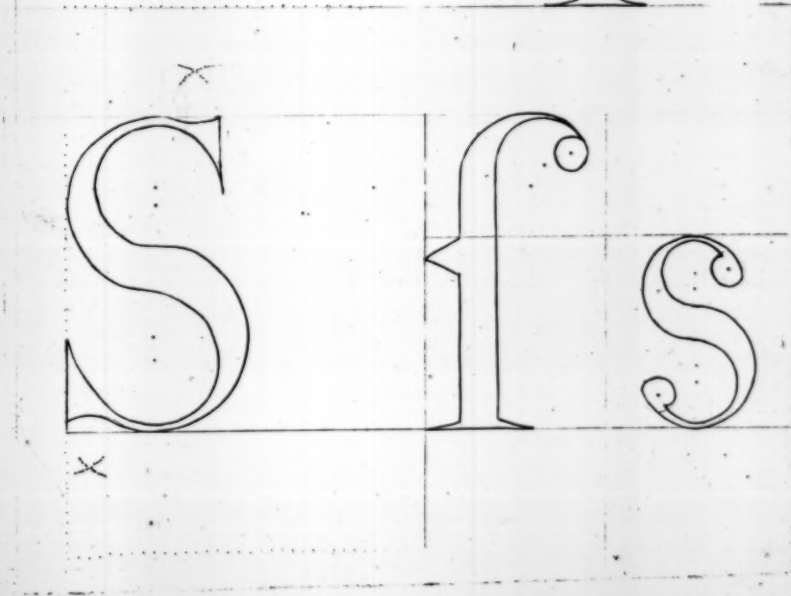
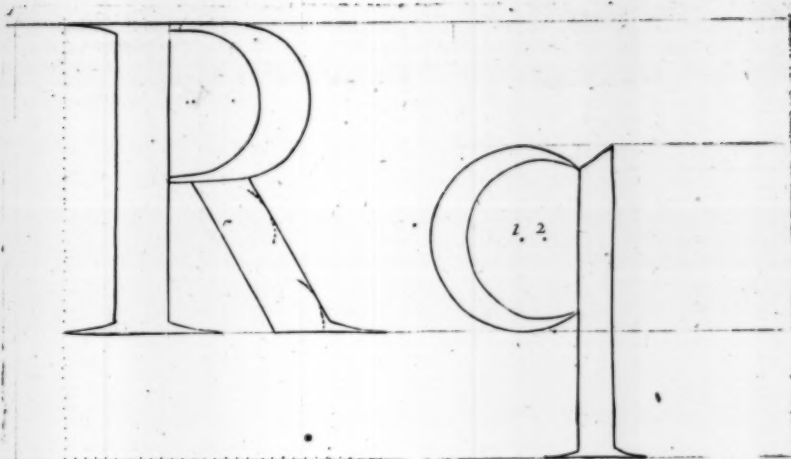


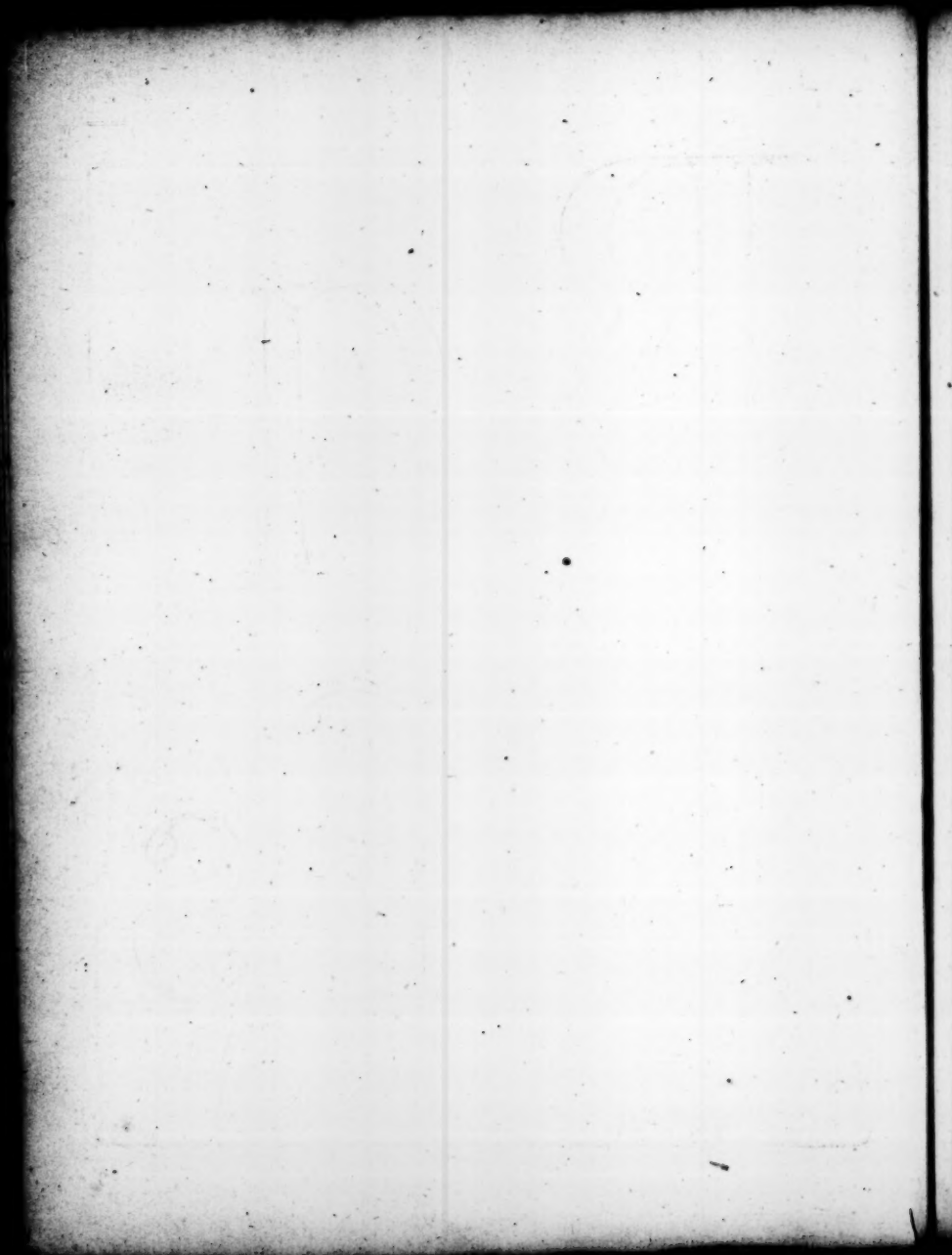
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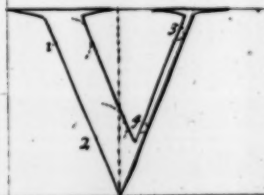
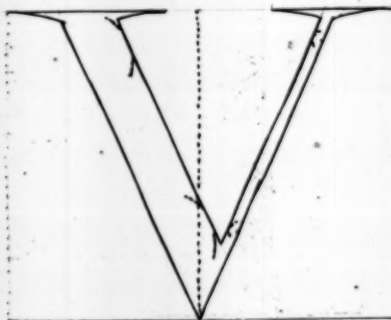
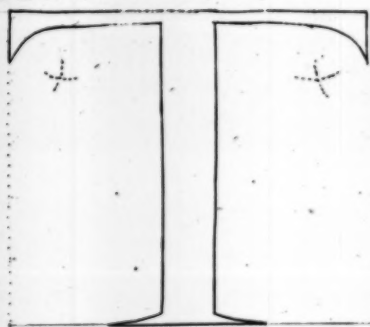


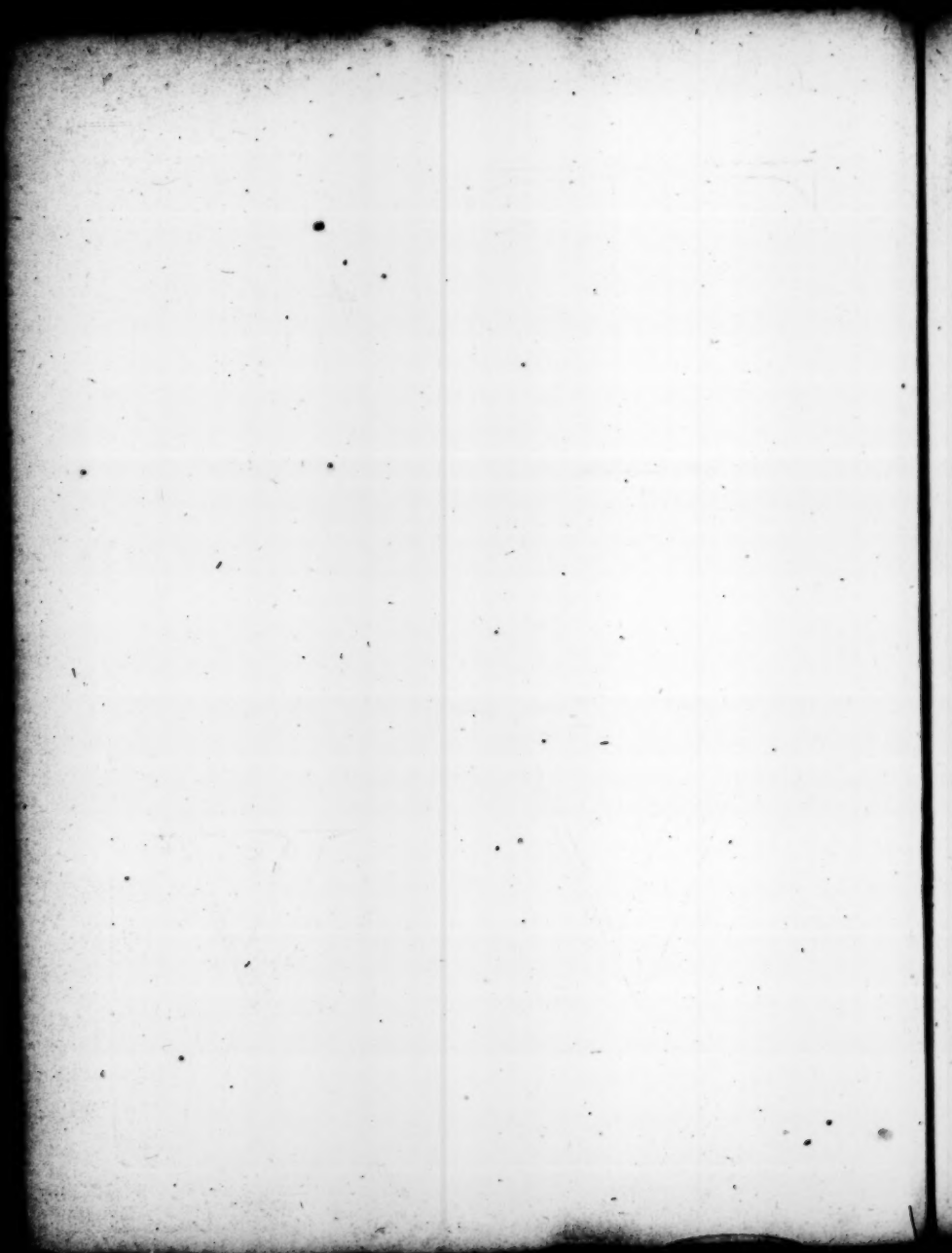


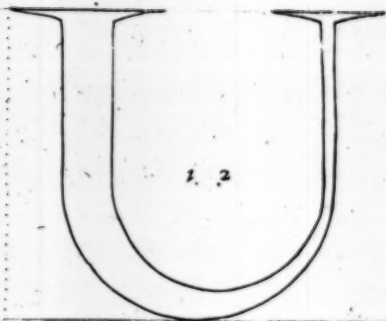




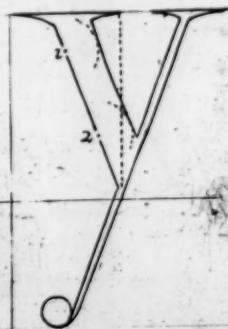
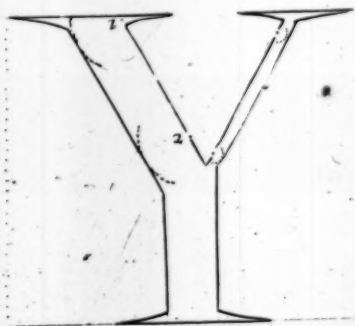




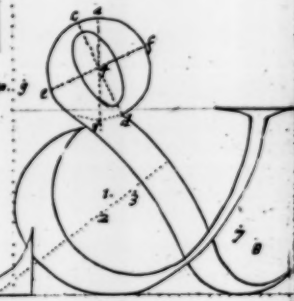
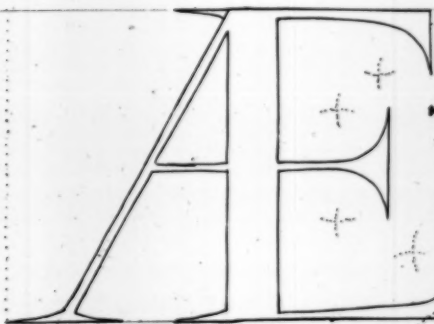
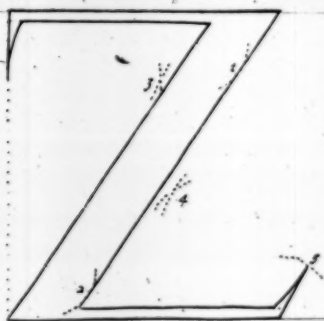


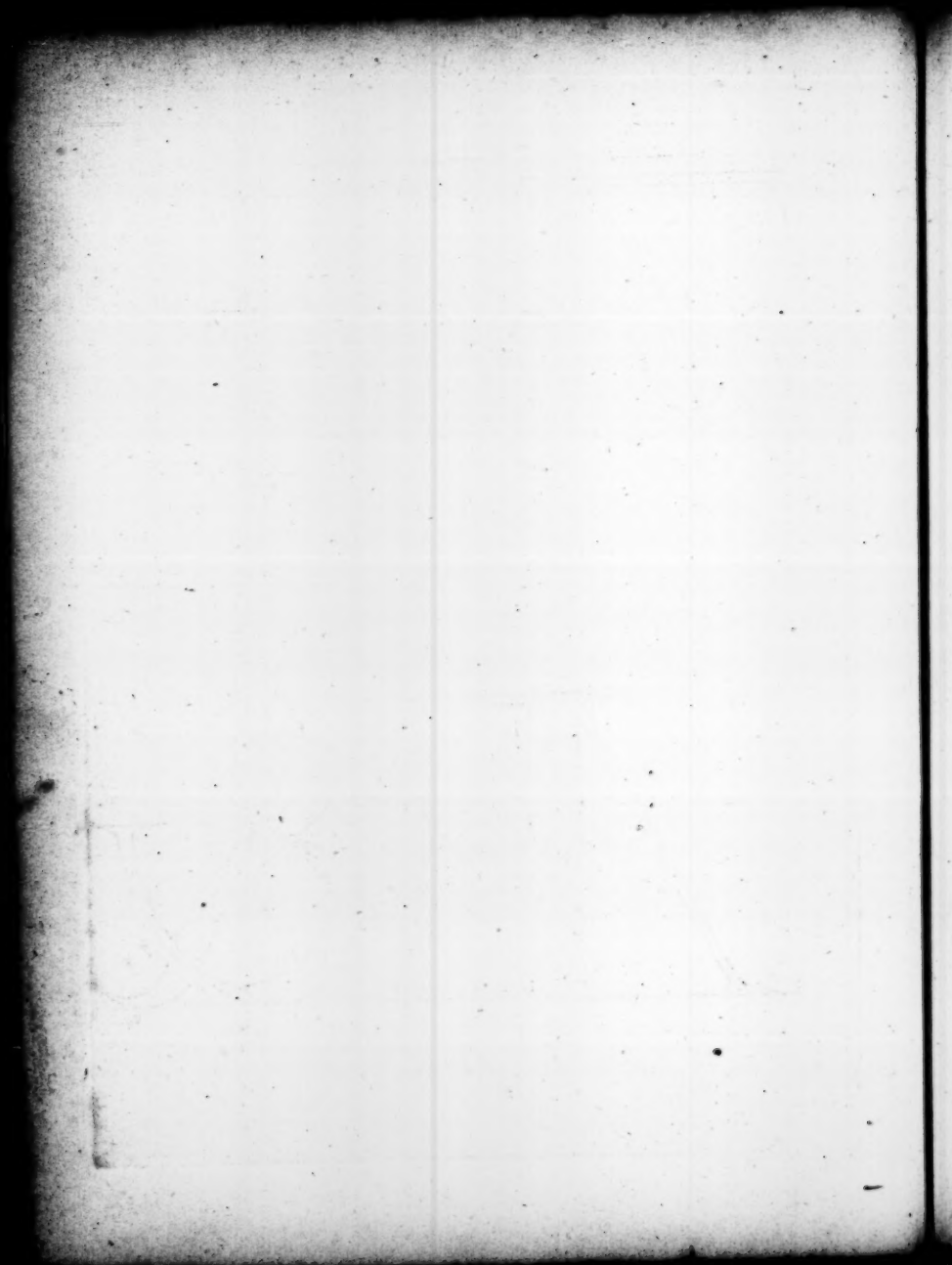


XV









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B b

1

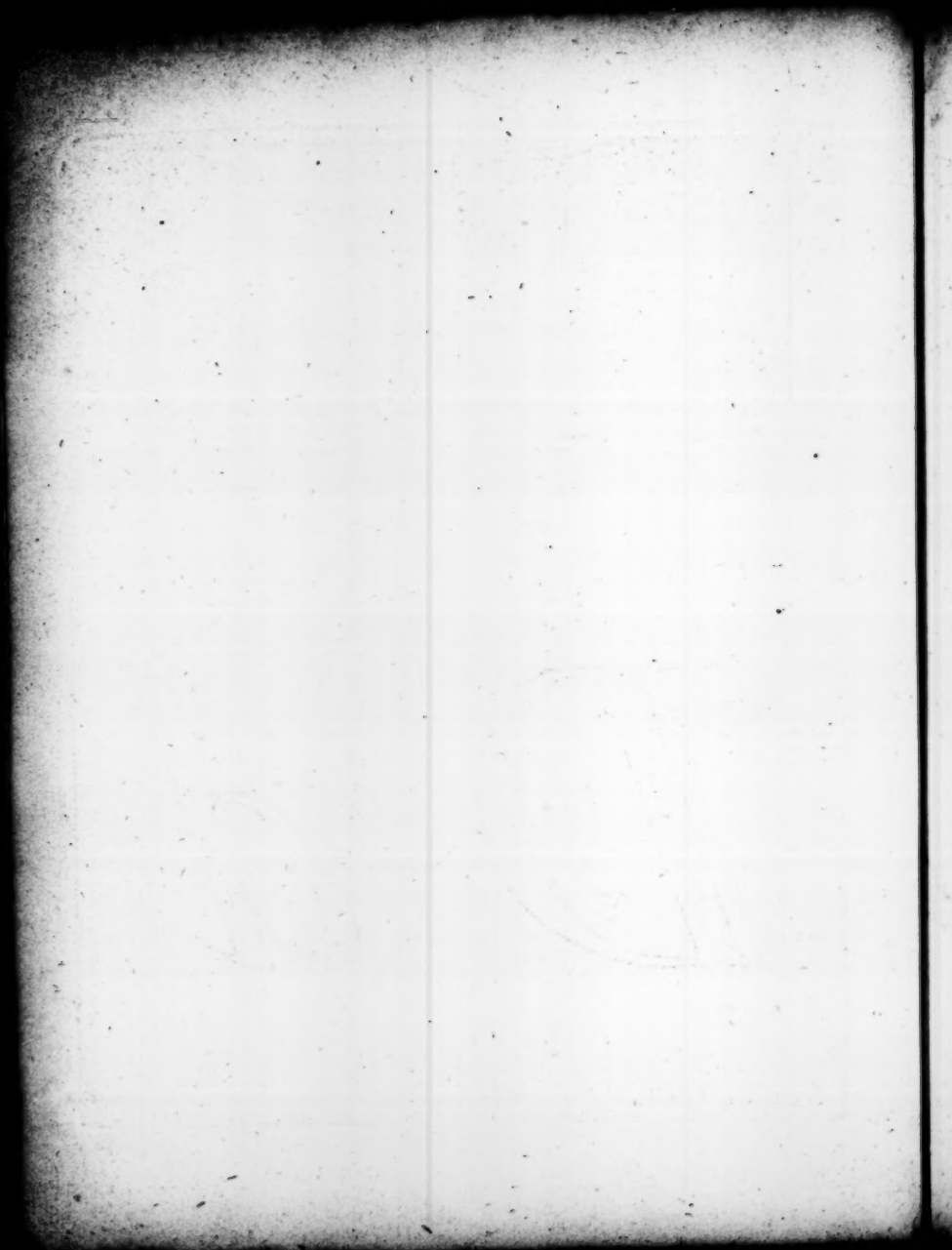
B

C

c

D

d



E e

F f

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G

g

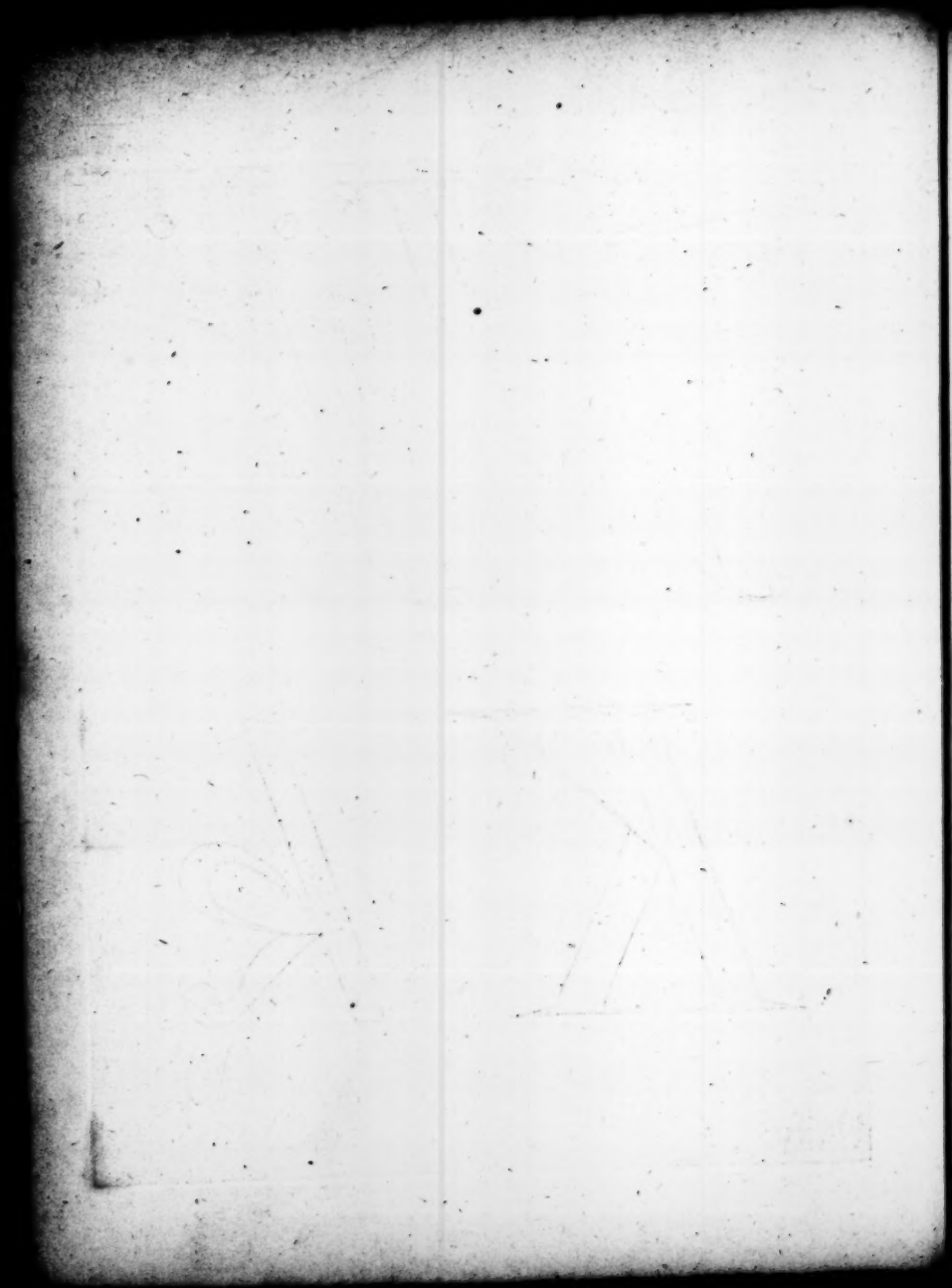
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CH

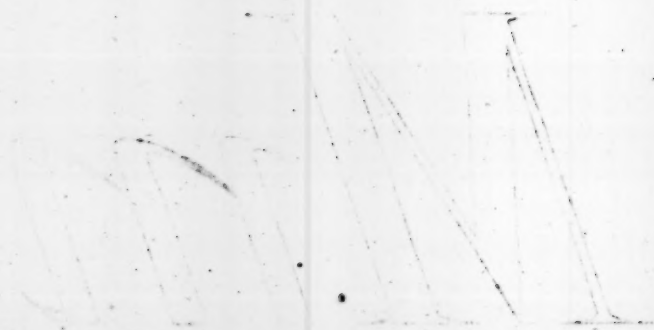
J I j i

K k



L l

M m

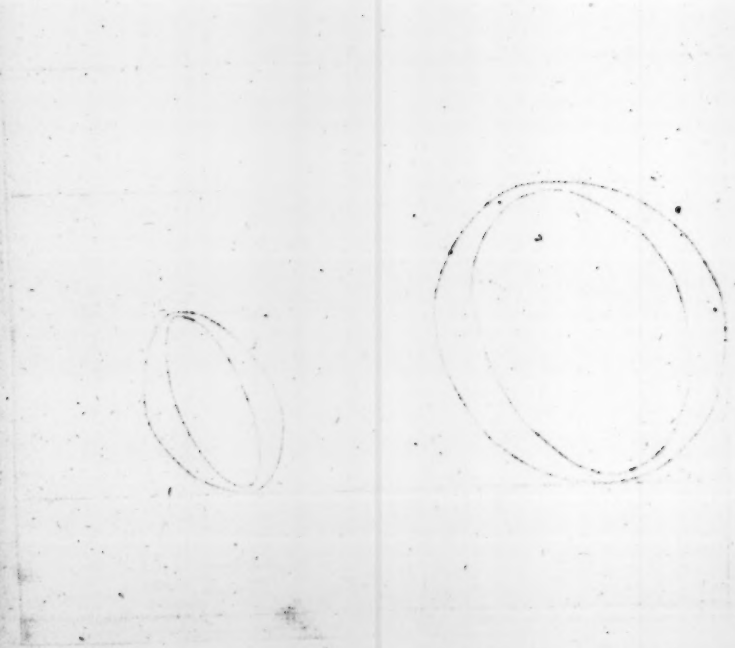


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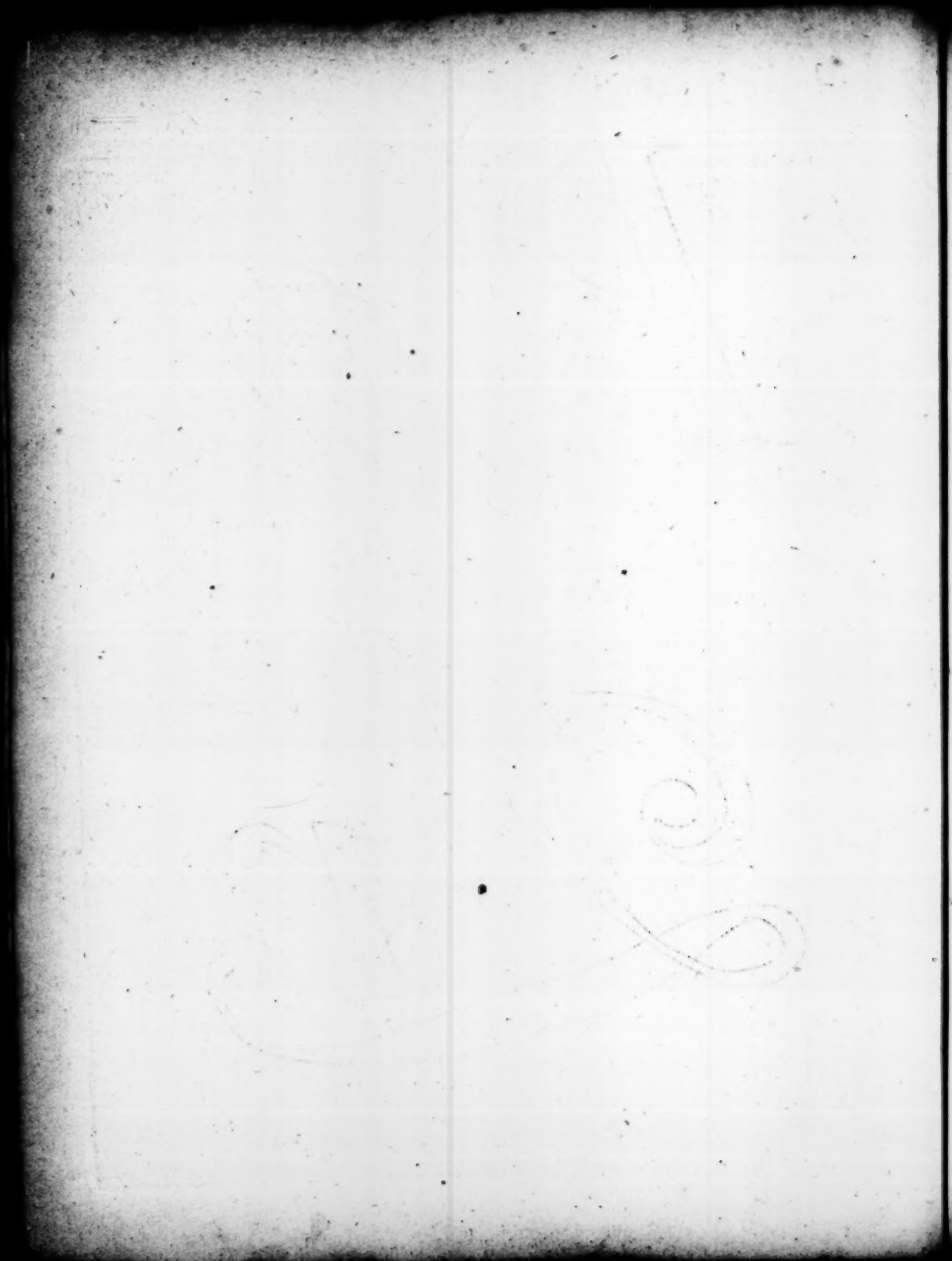


P

p

Q

q



R r

S s

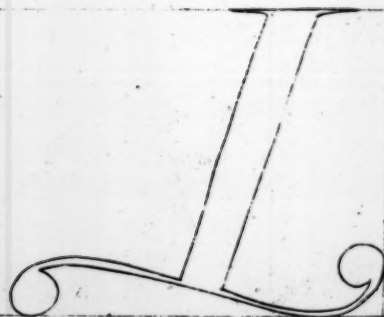
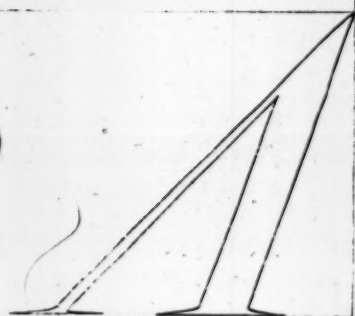
x

M

m

X



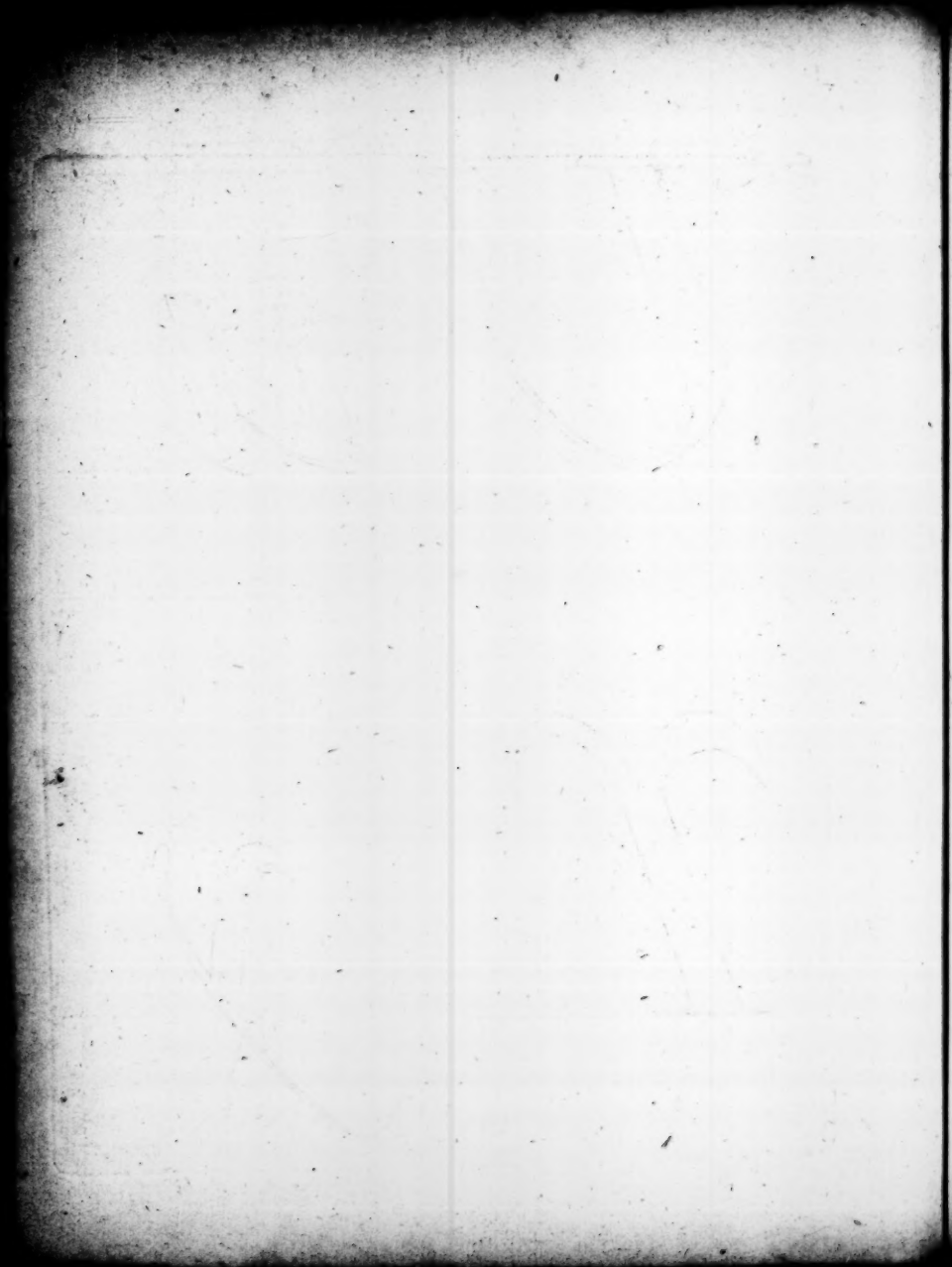


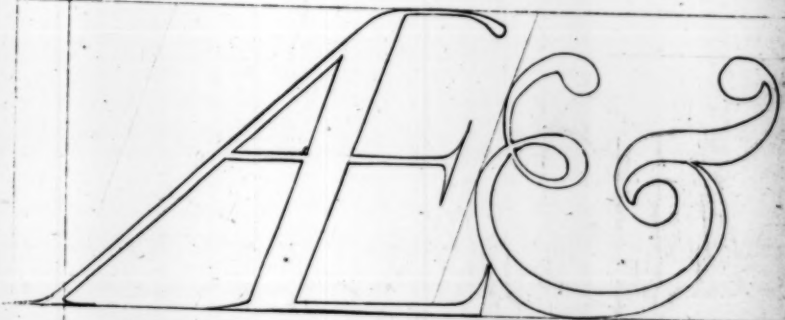
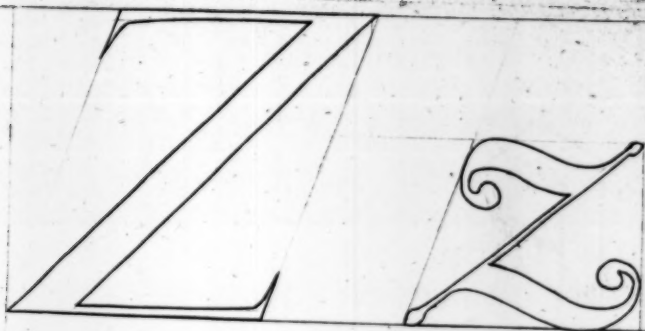
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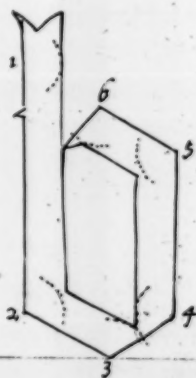
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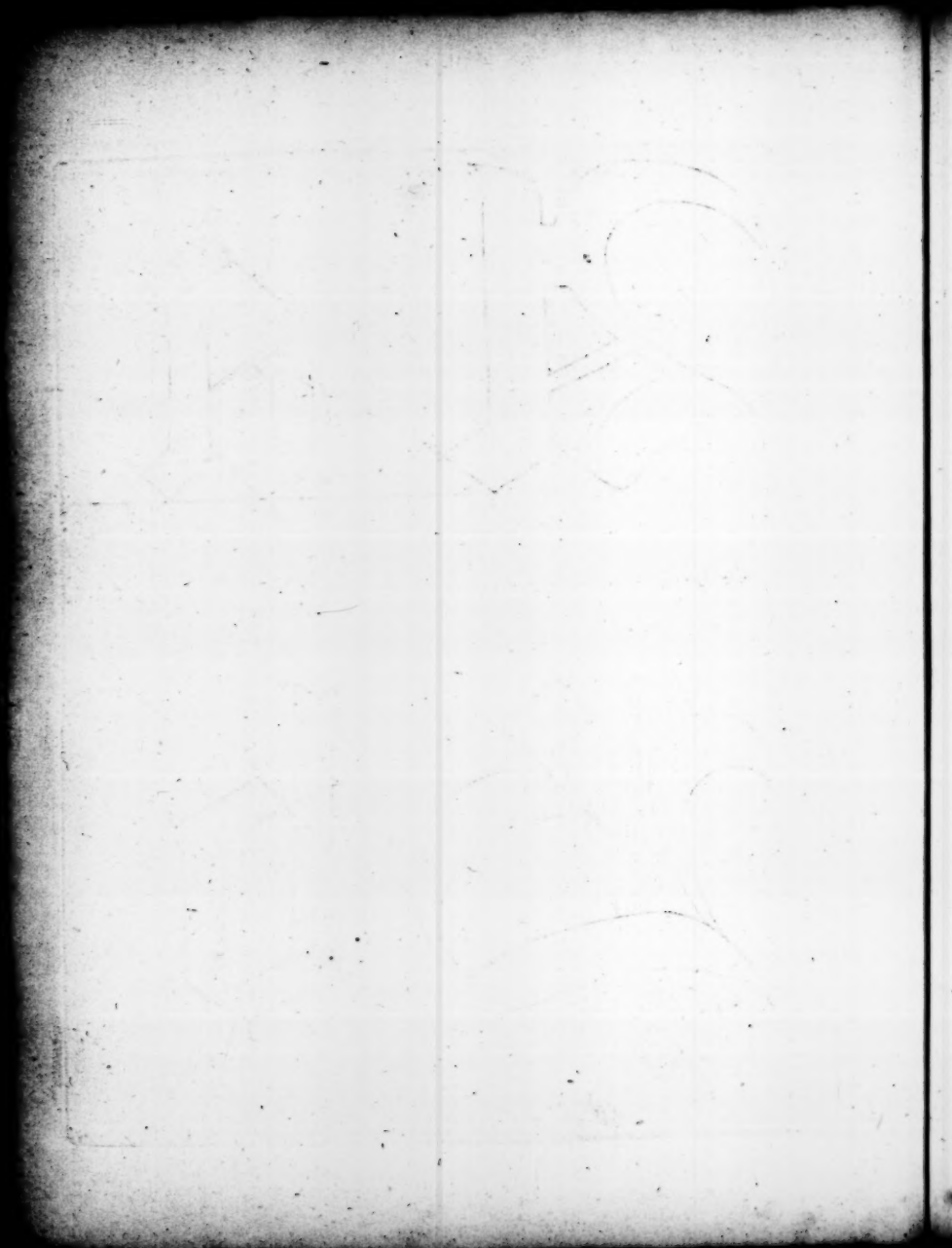
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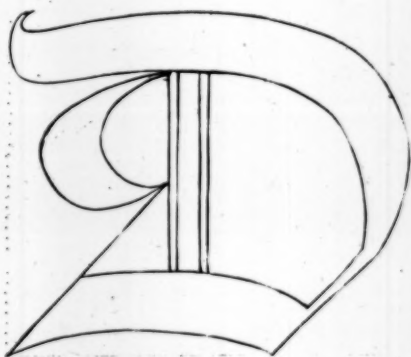


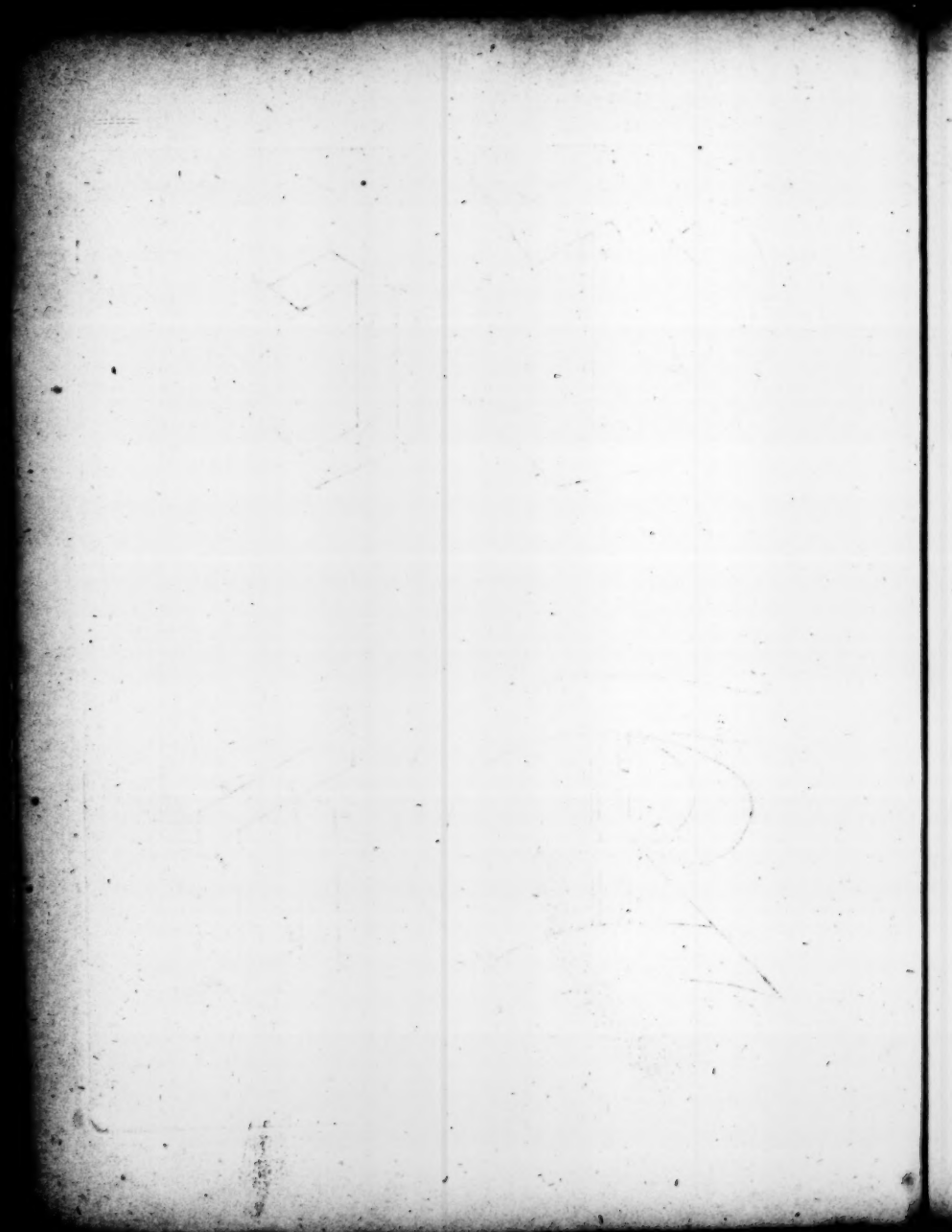


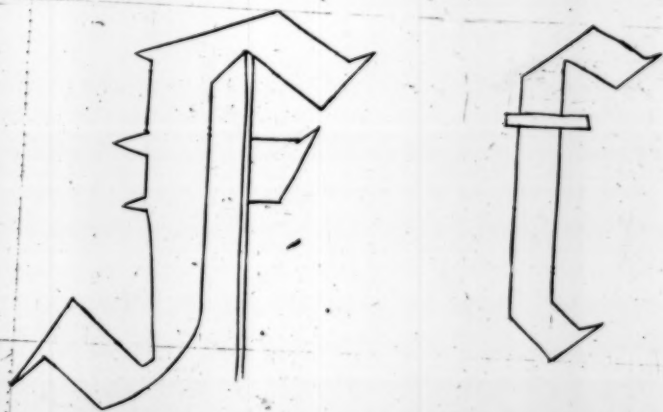
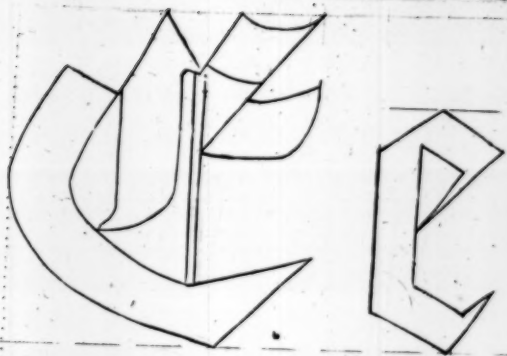




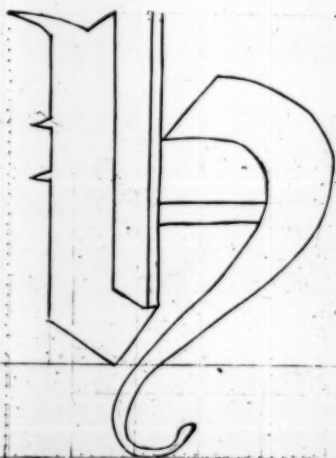




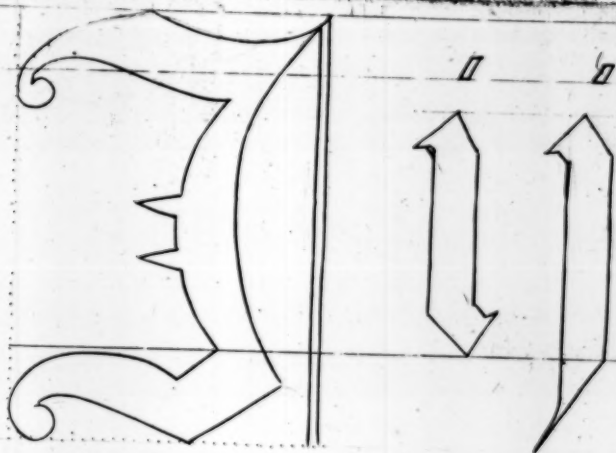












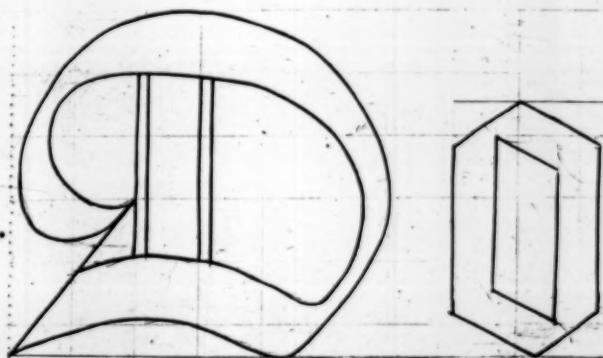
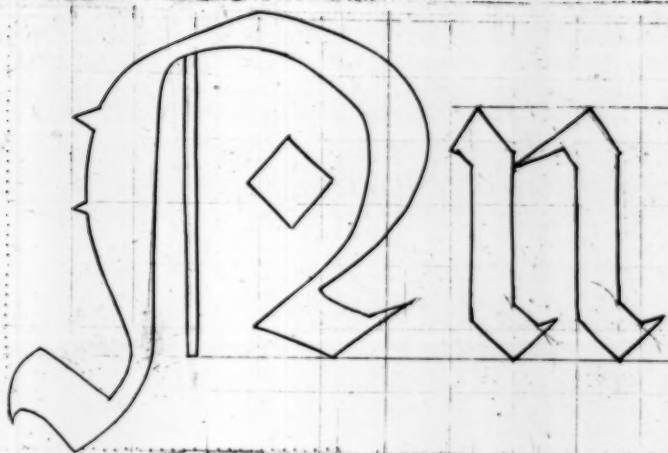


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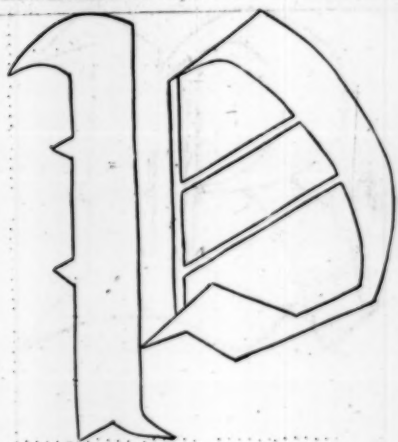
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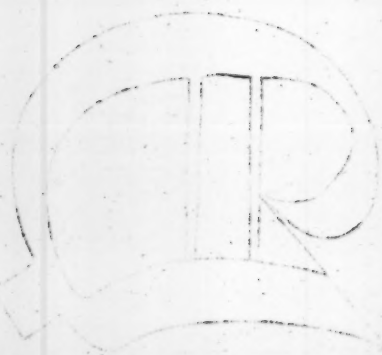
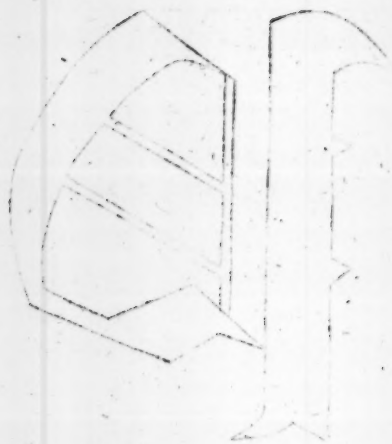
100



W R

O R





R r z

S s



